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101 up	3.50	4.25	5.00

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THE AMERICAN BEE JOURNAL

HAMILTON, ILLINOIS

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Fill Every Hive in '55.**

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COLUMBIA, SOUTH AMERICA—I am glad you approve of my publishing translations from the Journal, especially those concerning pollination and insecticides. This country is progressing at full speed these days, and beekeepers are suffering from the use of airplane dusting. Fortunately the farmers in my location give me a screen frame for every hive in my apiary across the cotton field so I may close my hives on the eve of fumigation days. Next day, in the evening, the bees are released. Everybody is happy.—A. deZubirias, Cartagena.

MINNESOTA—I like the Journal, especially the ads, You Asked For It, and All Around the Bee Yard. I like the whole blessed paper. I have a family of eleven children and we use 5-9 pounds of honey a week. I use a half teacupful a day myself. We are a healthy bunch and I think honey has a lot to do with it.—Francis Pawlitschek, Glenwood.

CALIFORNIA—I have never seen any business so much in need of mechanization as beekeeping. The honey house bottleneck must be overcome before beekeeping can come into its own. Also, with urbanization driving beekeepers farther and farther into the wilds, something must be done to make fewer colonies make greater returns.—William M. Woody, Chatsworth.

KANSAS—I am a dozen colony backlotter, take three bee magazines, have most of the bee books and play with my bees instead of going fishing. What I would like to see is more "how-to-do-it" items from other beekeepers. General articles are interesting but the ideas that pay off is what makes the magazine pay for itself, especially for the beginner and amateur.—R. N. Crawford, Anthony.

MICHIGAN—I am only a backyard beekeeper in the city of Detroit but I have always been so interested in beekeeping I can't give it up. Now I have only two colonies, but last year sold about \$40 worth of honey and have that much surplus left.—James Ludds, Detroit.

CALIFORNIA—In conversation with a "big" beekeeper who operates in three or four states, he made the comment that "such and such" a bee journal had become such a hobby magazine that it is hardly worth reading any more. I myself operate up to 600 colonies for package bees, pollination and honey production and I think that you do not write nearly enough for the small beekeepers and hobbyists. They are the best friends the industry has. None give so much to the industry and receive so little return for their efforts as the small beekeeper or hobbyist.—Troy H. Nance, Sacramento.

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100-up	1.00	1.30	3.00	3.90

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24-99	1.15	3.35	4.25	5.25
100-up	1.10	3.25	4.15	5.15

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We guarantee live arrival and health certificate with each shipment.

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Lots of	2-lbs.	3-lbs.	4-lbs.	5-lbs.
1 to 11	\$3.25	\$4.25	\$5.15	\$5.95
12 & Up	3.00	4.00	4.85	5.60

Queens—1 to 11, \$1.10; 12 & Up, \$1 ea.

All Queens sent Air Mail. Package Bees sent Express Collect or Parcel Post when Prepaid by customer. Parcel Post is Much cheaper and has proven to be very satisfactory. Live Arrival Guaranteed. Please send orders in early.

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Abroad

France

Spraying . . .

Though efforts are being made to protect French bees from spraying, conditions are mixed since rape is one of their principal honey plants and the spraying must be done when the plants are in bloom. There is some renewed hope in a new Toxaphene being perfected in Germany which is noninjurious.

Australia

Demand for Honey . . .

Australians, according to the "Australian Bee Journal" are looking forward to a flourishing honey business with Britain partly owing to the very short crop in the British Isles and partly due to the favorable position of Australia in getting honey into the islands. They report that a "colossal" market exists in Great Britain for honey.

India

Horticultural Crops and Nectar . . .

Indian Bee Journal for Nov.-Dec. reprints an article from "Indian Journal of Horticulture" by our old friend Sardar Singh who took graduate work at Cornell some years ago. Mr. Singh reports on the nectar from various fruit blossoms including one we were unacquainted with, Jambolan, (a Java plum) which may yield up to 5-10 lbs. of surplus. He treats also of vegetable bloom and that of shrubs, bushes and roadside trees.

England

Poor Crop . . .

Honey crops have been short in the British Isles and in Ireland. In fact so much so that the National British Honey Show was canceled for the 1954 season.

Germany

The Honeybee and the Forest . . .

In a translation of an article from Deutsche Bienenwirtschaft, our old friend Dr. H. M. Fraser comments on the author's writings: The birds, the ants, the insects all have to do their important duty in the forest, that the nature of the forest prevail. What then was the honeybee's duty in those early days of wild bee trees? Adequate pollination not only means ample fruit in our domestic varieties, but it means the same also to the forest, not only to the fruit but to the health of the plant itself. Forest seeds are plentiful, they are scattered by the winds and carried by the birds, but it remains for the bees to assure that the seeds are available. Similar efficiency by beekeepers would require endless arrangements for proper position of each element. General co-operation between forest authorities in Germany and the beekeepers is endeavoring to foster such natural forest activities.

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Preparation and Marketing of Honey in the Comb

by Carl E. Killion

MY first super of comb honey was produced in 1917. Since then many changes have taken place in handling and marketing. Neighbors and relatives were almost standing in line to get a section of honey. Everyone knew that the Killion boy had a few bee "gums" as they were called. Strange as it may seem that first super was the best grade of pure honeydew I have ever seen.

Our policy is never to sacrifice the quality of comb honey in cutting production costs. Sections must be of exact size and correctly milled, not too narrow, or too short; with the V grooves properly made. The sections must be square when folded. We also prefer the lightest and most tender wax foundation possible for use in the sections.

We fasten both top and bottom starters in the sections and our fastening board permits us to fill supers at the rate of over 15 an hour. Very few sheets of foundation fall out of our sections. Some beekeepers report they have quite a loss from foundation falling out, so they use split sections. Our experience shows that split sections do not ship as well as the unsplit, and they also lack something in appearance.

In removing comb honey supers, both the tops and the bottoms of the supers are examined before deciding that they are completely finished, since bees usually finish the lower edges of the combs last. The finished supers are put on top of the unfinished ones until we are ready to remove them. We may want to blow a few more puffs of smoke across the tops of the supers than would be necessary in the first examination. It is best to use a cool smoke because any blast of soot on surfaces of the combs may be impossible to remove. A few puffs of smoke are used and the super is shaken to dislodge as many of the bees as possible.

We plan to have not more than five (sometimes six) supers over each bee escape. We remove all our comb honey with escapes rather than

acid boards. We have tried acid boards but they do not suit us as well as the escapes.

The first year one of my yards was placed in a clover field without shade there was some loss from honey melting down when the supers were over the escapes. To prevent this loss we made rims of wood an inch and a half wide and the exact size of the supers. Holes were bored in the sides of the rims and fly screens tacked over the holes on the inside. These rims are used directly under the cover. With their use, we have not lost a section from heat and we believe the bees leave the supers a little quicker.

After all the supers we want to remove are over the escapes and before we leave the yard, the covers and ventilators are removed carefully and the clinging bees are shaken off. Otherwise large clusters of bees would be forced to go through the escapes. Most of the supers will be almost free of bees in 24 hours.

When a load of honey reaches our shop it is fumigated for wax moth before the supers are placed in the comb storage room. So far we still prefer to use carbon disulfide. Three years ago I handled supers too soon after using this fumigant and I had a narrow escape from crossing over the River Jordan. The effect of the gas was not felt for several hours. I have since used more dangerous gases in bee work but used them with more precaution. Carbon disulfide fumes were considered too weak to worry about.

After fumigation, a check is made of the honey to determine its moisture content. If the moisture is above 18 per cent the dehydrating equipment is turned on and the moisture content brought down to 18 per cent. We now have forced warm air, a Humidry machine and a large fan for additional forced circulation. Excess moisture should be removed in one-third the time formerly used.

Supers are stacked 16 to 17 high using strips of wood underneath to permit free passage of air. The



supers are criss-crossed to give ventilation but one corner of the stack is kept straight up and down to save space. Our 1954 crop was so low in moisture we did not use our dehydrating machine but, if this equipment had been in use in 1941, we would have been richer by 700 supers of comb honey.

The supers are removed from the storage room the day before they are to be scraped, stacked 15 high in straight stacks and fumigated again. Our method of scraping propolis from the sections still remains a job of handwork. Single edge, new, safety razor blades are still tops with us for the removal of paraffin from the tops and bottoms of the sections.

Our marketing problems have changed in the past few years. When I was getting into production with a few colonies, comb honey was going to market in wooden cases with glass fronts. Each section was removed from the case when it was sold. Almost every grocery sold comb honey and no one handled the sections except the grocery clerks.

Today the glass front case is a thing of the past and the cellophane wrapper is fast losing ground because, although it does display honey beautifully, it does not give protection. Today comb honey may often be tossed into the customer's cart along with canned goods, soap, and heavy items. Also when people pick up a section they place their fingers over the sides, often right through the cellophane, right into the comb. After damaging it they often put that section back (to run over the other sections) and take an undamaged one to the checking counter. So now

we use a window front carton with a very tough material for the window.

Since our sales of comb honey are not always within the boundaries of our own state, we try to comply with all the laws possible in the proper stamping of our honey. For instance, Illinois has a closed package law and when comb honey is wrapped in cellophane or placed in a window front carton or any other enclosure it becomes a closed package, and the name and address of the producer or packer must appear on each section, as well as the net weight. Our Food and Dairy Law will not permit the use of a stamp, for example, saying: "Net weight not less than 12 ounces." The words "not less than" are regarded as superfluous or misleading. The exact wording is required such as: "Net wgt. 12 oz."

Personally I would like to see all states adopt our Federal Standards for honey grades so that the interstate movement of honey would be uninterrupted and we could market in a more orderly manner. I do complain when I find honey on a shelf without a name or a net weight.

Some of the large chain store buyers will not buy comb honey. They say it is "too messy" or "we break too much." But in another city a branch buyer for a large company buys from us every year. Our work in 1955 in marketing will be to convince some of the chain store buyers that they cannot afford not to handle our product.

As for other markets, the roadside stand offers a good outlet, especially for section comb. Customers who want it and who can't find it in the super market, will look for it at the roadside stand. We find it profitable, also, to supply church bazaars and other organizations with samples of honey.

Now that we have television I expect the market for comb honey to improve with leaps and bounds. We can show our beautiful product to millions, explaining how to use it. We must have an educational program. This was demonstrated at the National Federation Banquet. We supplied a section of comb honey for each table. After the banquet I noticed that although some of the sections were still in an upright position, there were holes dug in the comb. We forgot that these beekeepers have been reared in an age when liquid honey is all with which they have had experience.

One question often asked is: "Do

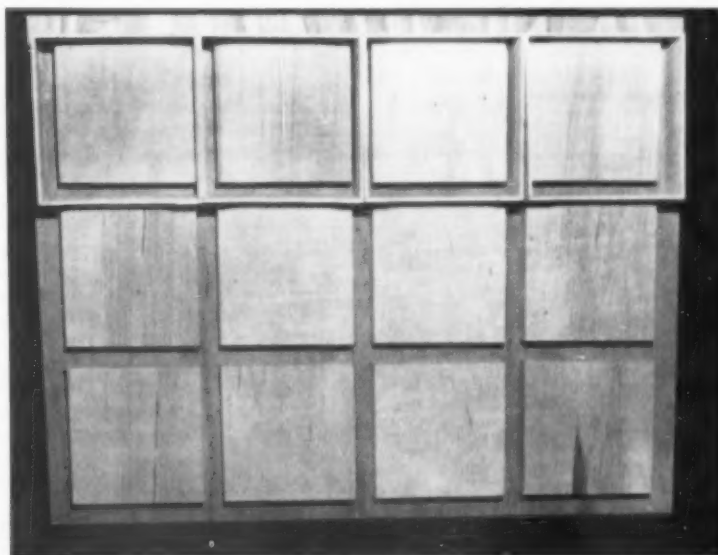
you eat comb and all?" That is a sensible remark compared with saying, "honey is too sweet." Is it supposed to be sour, or have some other taste? I like to keep smiling when I get into conversation with these people, as some will say: "Oh, I don't like honey." Then I reply that is to be expected for "I don't like beer but I guess some folks do the way they drink it."

We must work for quality in comb honey. I am not interested in helping any beekeeper market off-grade

comb honey. It is better to chunk it than to let it find its way to our market and have customers turn away from it.

Pack a quality grade of comb honey and it sells itself. Each year our own markets expand a little more without much trouble. In 1954 we almost doubled our production but by December the honey was gone and buyers wanted still more.

The illustrations for this article are from Carl E. Killian's book "Honey in the Comb," published in 1951. Those who would like copies can obtain them from American Bee Journal.



Above: The foundation fastening board with one row of sections in place.

Below: This small, compact unit removes moisture from the comb honey.



Nosema Disease and Its Control with Fumagillin

by C. A. Jamieson

Chief of the Apiculture Division, Central Experimental Farm, Ottawa, Can.



NOSEMA is a common disease of adult honey bees and is probably more widely distributed throughout the world than other recognized diseases of bees. It was first discovered by Donhoff who reported the presence of spores in the intestines of bees in 1857. This discovery was almost forgotten until 1909 when Zander found the parasites in the walls of the intestines of infected bees and, with the assistance of Doflein, classified the parasite as a protozoan. Zander named this one-celled animal organism, *Nosema apis*.

Distribution of Nosema

Following the report of nosema in Germany (Zander) it was also observed in other European countries. It was shown by White, 1914, to exist in all the beekeeping regions of the United States. A Canadian survey (1944) confirmed its presence in all the important beekeeping areas of that country. In more recent years beekeepers in Australia and New Zealand have expressed concern over it there.

Because of the complex nature of the disease it is hard to assess its economic importance. No one has cultured the organism outside of its natural host. Its complete life history has not been established. It is not possible to recognize nosema disease by the gross symptoms. Other abnormal conditions, such as poisoning and paralysis, may be confused with the behavior of bees suffering from advanced nosema infection.

Effect of the Organism on Bees

Spores enter the digestive tract and upon reaching the ventriculus they germinate and enter the cells of the epithelium (a thick cellular layer in crosswise folds that increases the extent of the digestive

surface). The ventriculus (the true stomach) is a vital organ since all the assimilation and digestion of food takes place in it. In an effort to overcome the effect of the disease the bee ingests more and more food until finally more cells are destroyed by the parasite than can be replaced by the bee. In advanced stages the bees lose their ability to fly, and crawl away from the hive to die.

It has been shown by European investigators that when a heavy infection occurs in young bees, their pharyngeal glands are unable to function properly and so they cannot secrete royal jelly to feed young larvae.

Queens that become infected show reduced egg production and finally many of these eggs fail to hatch. Infected bees in small cages live about half as long as uninfected bees. To determine the longevity of infected bees under hive conditions, some 200 young workers were inoculated and, after infection was evident, the bees were painted and introduced, in groups of 50, to nuclei. A like number of uninfected workers, painted another color, were introduced to nuclei as controls. After 21 days, about 30 per cent of the infected bees were seen in the nuclei, while slightly less than 70 per cent of the check bees were still present.

Spread of Infection within the Hive

Under conditions of severe infection in a colony in winter, defecation takes place on the combs, a common event where weather conditions do not permit frequent flight during the inactive season.

Bailey, of the Rothamsted Experimental Station in England, maintains that transmission of disease from infected to healthy bees rarely occurs during the summer. He be-

lieves the main source of infection during this period is the comb. Furthermore, he states that moving colonies from one area to another causes excitement and defecation in the hive.

We have observed that infected bees, held in the laboratory, defecate in their cages and that this material contains spores of the disease, suggesting the possibility that bees in package cages may build up infection during transportation from shipper to buyer.

It is probable that the mouth parts of hive bees become contaminated while cleaning cells and the spores enter the digestive tract when the bees ingest honey or nectar. The disease could also be spread by contaminated honey and drinking water.

Effect of Temperature on Development of Disease

Studies on the effect of temperature on the development of nosema were reported by Karmo and Morgenthaler in 1939, and by Lotmar in 1944. It was shown that the disease develops over a range of temperatures but fails to develop at 98.6 degrees F. Infected bees recovered when kept at this temperature for ten days. Burnside and Revell, of Laramie, Wyoming, repeated the experiments. They found (1948) that the development of the disease is retarded at brood rearing temperatures—93 to 95 degrees F.—and at temperatures of broodless bees in winter. They also observed that diseased bees recover when kept at 99 degrees F. for two weeks.

Treatment for the Control of Nosema

Following our discovery in 1951, of the effectiveness of fumagillin for the control of nosema, we tested its effectiveness on the disease in packages and overwintered colonies. The

results of our experiments, and those of Dr. Farrar, on package colonies show that fumagillin arrests the development of the disease, allowing normal development of the colony. Also significantly increased production was obtained in package colonies fed fumagillin at Ottawa in 1951 and at Brandon, Manitoba, in 1953. In 1954 the fumagillin-fed colonies developed more rapidly than the check colonies although the difference in production was not as great as in previous years.

Overwintered colonies, fed fumagillin in the fall, showed significantly less infection, (as determined by examining 25 bees from each test colony) than check colonies. We have not, however, shown that the feeding of the antibiotic to the overwintered colony will be reflected in increased honey production.

It is our belief, in Canada, that colonies going into winter with strong populations can overcome the effect of the disease. In the package colony, however, because of a much lower population, the disease is much more serious. A reduction in the life of worker bees by one-half has a much greater effect on the welfare of these colonies. Also there is great danger of queens becoming infected and superseded. The possibility of this is quite clear when one considers the fact that it will be 30 days before young bees can be developed in the package colony. It is in this period that the queens in package colonies are most liable to become infected.

Recommendations

We agree with the advice that package colonies be fed Fumidil B at the prescribed dosage level when they are installed, since this will eliminate the disease below the danger threshold and permit the colonies to develop normally.

We urge queen breeders to use this antibiotic in cell-building colonies and queen-mating nuclei. Attendant bees, shipped with the queens, should be free of the disease to protect the queens.

Since temperature has an influence on the development of the disease, beekeepers should have their colonies fully exposed to sunlight, yet protected from prevailing winds to take full advantage of the sun's heat. Brood chambers of dead colonies, severely spotted with fecal matter, may carry a high concentration of spores, yet bees may be installed in them safely if Fumidil B is mixed with sirup to prevent the development of the disease.

Save Costs in March

by G. H. Cale

March isn't exactly a spring month, is it? We used to think that little could be done with bees in March, must wait until sunny April days. If a hive is opened in cold weather, brood will be chilled. Too cold to work bees. March "is still a winter month."

However, truth is that the last of March is a prime time to concentrate a lot of what used to be later handling into one operation. A week at the end of the month, spent in a streamlined job, may make it unnecessary to return to the bees until the last of April or the first of May. One day will so condition fifty colonies that they will be in the pink by that time.

Well --- all right. Here's the story. In my present practice every colony the last of March is reversed. That needs explanation. Each colony winters in two hive bodies and a shallow super. The fall weight was seventy to 100 pounds of honey, with plenty of honey over pollen and considerable separate pollen. So you see the getting-ready for this March job began last fall. Reversing means that the shallow is put on the bottomboard; what was the middle hive body is placed on the shallow, and the former bottom body is set at the top, a complete reversal.

Robbing? Seldom; just a bit too chilly; work fast; use cover cloths. Don't mess with the combs much. Look into the body that was at the bottom as you handle it. If the brood pattern is okay the queen must be good. Don't look for her. If there is disease it is likely to show on the same comb. Just one comb with a good amount of brood tells the full story. And the weight of the hive parts lets you know what the food

supply is and about how long it will last.

Of course, if there are dead colonies, or very weak colonies, do something about it. Take the dead home and decide what is what there. Exchange a weak colony with a strong one if the colony is otherwise okay. If you think some of the queens are misbehaving, mark them until fruit bloom and then requeen. There may be so few that you won't want to fuss with them. So unite them somehow, either with each other or with stronger colonies. Don't expand the entrances; too early for that.

When you reverse, clean off the bottoms or replace them as you go. Reseat them in a new spot where they will be on firmer ground. If you find disease gas out the colonies (or treat if it is EFB).

Now for feed. You shouldn't really be short on feed but you may have colonies that need to be helped so that you can streamline the next visit and not make a special trip. Even though these lighter ones do have some honey left, give each of them a thick (two to one) sirup in a ten pound feeder, with only one ten penny nail hole in the center of the lid. This is a slow feeder. At the same time leave several pounds of dry sugar (see picture) as a reserve and you will have a feed supply which, in itself, will last a month, even with rapid brood rearing.

There you have it. In one job you have accomplished a whole lot of things and you will find it a cheap job and you will feel quite comfortable about the bees, sometimes until well into April.

In the meantime a good queen will fill in all brood areas especially in the top combs where she now has abundant room.



(Picture from Brother Frederick, Techny, Illinois). Just dry sugar. See how those rascals work it, like a crowd of hungry boys at a picnic! The rim is enough to let the bees into the sugar feed chamber constantly, as long as they want the sugar. They will not use it when honey comes in in enough volume to suit them.

The Sad Case of The Carniolans

by Robert M. Mead

AMERICAN beekeepers have bred and developed the Italian bee, and to some extent the Caucasian, but the Carniolan, perhaps the most desirable race of all, has had scant recognition. The statement that the Carniolan might be the most desirable race will be challenged by many, but I sincerely believe it to be true.

I became interested in the Carniolan many years ago and bought queens from several different breeders. In spite of differences in performance, the best of them produced the largest worker bees I have ever seen and they were prolific, quiet and pleasant to handle.

One winter I worked for a Carniolan breeder in the South. His wife had great ability as a breeder and also the knack of picking out true representatives of that race from which to rear queens. That is the crux of the whole matter. What is a Carniolan bee? The true Carniolan is a dark race of bees and to the uninformed is easily confused with mixed dark bees of indeterminate race. The efforts of these southern Carniolan breeders were nullified because they were in a district where beekeeping was intensive; most of the bees around them were light-colored Italians and the young Carniolan queens often mated. If these people could have had a location free from other bees and if they could have devoted their efforts to promoting only Carniolans the history of that race might have been different.

I have not visited other Carniolan breeders but they all may have some difficulty keeping the race pure.

The true Carniolan, if you can find it, is a fine race of bees. They build fine looking combs, winter well, and do not propolize the hives as some other races do. They have been named as excessive swarmers which I think is unfair because a little work with them would have eliminated this undesirable characteristic as it has been eliminated from other strains.

The beekeeping industry is over-looking a good bet if they do not do some intelligent work with this race. The best stock available should be bred in true isolation. Carniolans have been neglected and intermixed and discarded without a fair trial.

Vermont

Grapes from God's Vineyard

by T. J. Wells

FARMERS here in Oklahoma used to produce all soil-depleting crops. They raised corn and cotton, then more corn and cotton. The land became poorer every year and when drought came people packed up and hit the road to find newer soil.

Land that has been in legumes for ten years, and that has had sound soil conservation practices applied, can produce through a drought because it will have enough nitrogen and plant food for vigorous growth and enough humus in the soil to store and conserve what moisture does fall.

Twenty years ago the best advice an old man could give a lad was "Go West, young man, go West." But now the best advice is "Grow vetch, young man, grow vetch." Hairy vetch is the number one legume in Oklahoma, producing a paying seed crop and pasture that is high in protein content. If vetch is fed phosphate it will produce humus for the soil and store nitrogen. Wheat planted in combination with vetch produces more wheat than if it had been planted alone. With dairy cows to graze the pasture in spring and fall, and with honey bees to pollinate the vetch and harvest the honey you have a scheme that will produce four cash crops from one field in one season—milk, honey, vetch seed and a wheat crop. This kind of farming is Mother Nature's perfect coordination.

Plum trees and strawberries that are planted on land like this will produce the finest fruit. Strawberries so big that only three fill a teacup, sweetened with vetch honey are fit for a king's table. And when you come home from a hard day's work and your wife hands you a dish of plums sweetened with honey, fruit from a little plum tree only eight feet tall that produced two bushels the size of black walnuts, you will think you have been working with the hands of a giant and eating "grapes from God's vineyard."

Oklahoma

Relocation in Swarm Control

by Ben M. Knutson

IHAVE been using your relocation of hives in control of swarming as given in the *Hive* and the *Honey Bee* (pages 250-52). I stumbled onto the procedure long ago and remember discussing it with Herman Rauchfuss back in '36. But I didn't make it a routine procedure until recently. Then I made a rubber-tired hand truck to hook under the whole hive. With this I push the colony with swarm cells to the back of the yard and on its former stand place a new hive with young laying queen. I try to make this hive look like the old one.

The field bees usually go in without much hesitation. Sometimes however, they will not accept the new hive and will go into some other hive adjacent.

From my experience I can say that it is not necessary to cut the swarm cells out and have always wondered why you advise cutting the cells and then relocating too. This system is wonderful for the commercial producer as he doesn't have to look for cells or queens and he need not do any shaking. I hate to think of all the miserable hours I spent in the past looking for a queen for no other purpose than to put her back on the old stand with a couple of frames of brood and the rest foundation. I also hate to think of the hours I spent cutting cells. In both these methods we still had the old queen and the field bees together. In relocating, we separate the old queen and the field bees and when the old field bees find themselves with a new, young queen they usually give up and get to work. If they stay with the old queen, even on new equipment, they often still want to swarm.

During a honeyflow the bees will rarely kill the young queen on the old stand. They may sometimes swarm if the cells are not cut in relocating but I have yet to see an indisputable case—about one out of ten will turn up queenless the next trip but even then I think the queen was lost before relocating, or a virgin had already hatched, or maybe the bees had already swarmed before relocating. So I ask again, why recommend cutting all cells and then relocating?

Colorado

Honey Bee Communication*

by Vern G. Milum

Dr. Vern G. Milum is so well known for so much beekeeping accomplishment that many of us have profited from his efforts and know him so well as to be considered his firm friends. Few perhaps know about his life or how much he has done. Vern was born in Viola, Wisconsin, and was schooled in teaching and in business. In 1917 he became a Second Lieutenant in the Infantry and served overseas; seriously wounded in the second battle of the Marne, he was returned home and discharged, with awards of the Purple Heart and Service medal. Then, at the University of Wisconsin, he began his apicultural training; later became instructor there, continuing his major in apiculture and entomology. In 1925 he came to the University of Illinois, to rise from Assistant to full Professor in apiculture and entomology in 1952. His published work about bees, embodying most of his fine research, totals over fifty major contributions and many constant articles and reports. He has had many official positions: Secretary of Illinois Association; Honey Producers' League; National Federation; on board of directors of Institute; honey standards committee; finance committee; honey plant committee. Communications has long been a serious study with him so he brings you up-to-the-minute on this little known but very practical phase of bee behavior.

* Contribution from the Entomological Laboratories of the University of Illinois.



IT IS with some hesitation that I explore our subject because so much has been written in recent years, especially regarding the "Language of Bees." To meet the editor's demand for brevity, it will not be possible to cite all authors in a complete historical account. However, an attempt has been made to list the principal references, and in the parentheses after each the particular dances described therein. Most of the references cited contain bibliographies, but those who wish to examine the information in more detail are directed to the excellent summaries by Ribbands (1953). For sense-physiology and behaviour see Butler (1949). Since I have been observing various forms of communication by bees for several years, my own observations and conclusion will be included in part.

Honey bees, like other animals, usually respond in a given pattern under a given set of conditions, yet vary the conditions only slightly, either externally or internally (physiologically), and the response may be varied and perhaps not even visible to man. As a result, errors creep into written reports as printed in books and journals which, even

though later corrected, may not become generally known because of language difficulties or unavailability of the literature. Thus future writers may continue to repeat the errors for decades or even centuries. A writer thinks or assumes a certain thing to be true and the next writer repeats the idea as the absolute truth and the perpetuation is on. So in this paper, in a few cases, I will state what I think is true, give what reasoning or proof I have, and hope that some other more fertile mind will complete the story.

Senses of Touch, Smell and Taste

In a crowded social community such as the honey bee colony, the transmission of information and the response initiated by touch must be highly important. On various parts of the body and the appendages, especially the antennae, there are enervated hairs. These hairs with the associated sense cells thus are organs of touch which may be stimulated when the hairs are contacted with objects or currents of air. When we consider the contact that honey bees make with each other through their antennae, as well as their legs, feet and mouthparts, we cannot doubt that touch is an im-

portant method of transmitting a message, although in some cases we may not be able to interpret the response.

That honey bees give messages to each other by means of organs of smell or taste is quite evident. The power of perception is thought to lie in certain hairlike pegs, especially on the antennae, where they appear (30,000 in the drones) on the surface as minute oval disks or plates, with some sunken into deep flask-shaped cavities. Other inverted or depressed organs occur in groups on other parts of the bee's body which have been described as "olfactory" pores but these are now thought to serve for other purposes.

That bees do respond to odors is quite evident by their response to colony and queen odors, and the perfume of flowers, honey and other substances. When foraging bees return to the hive, the odor sense is involved in conveying from the dancing bee to the hive bees a message of the nature of the flower source. The experiments of v. Frisch (1950) seem to indicate that the odor (or taste) of nectar carried in the honey stomach of a field bee is much more influential in directing

other bees to a newly found source than is the odor or scent on the surface of the dancing bee's body.

The scent gland of the honey bee is most certainly an important means of communication. It is located on the top or dorsal side of the abdomen, on the front part of the seventh segment. Except in special situations, it is covered up by the overlapping portion of the sixth abdominal segment. Its purpose is to emit an odor or scent which aids the bees in recognizing the members of a colony and is thus helpful in detecting any strange bees or robbers that may attempt to enter a hive and carry away its stores. While each colony has its own distinctive odor, largely derived from the scent gland, this colony odor is modified by the odor of the combs, the brood, the honey and the incoming nectar and pollen. The influence of the latter is especially influential during the honeyflow for the masking of the colony odor probably facilitates the uniting of colonies and the introduction of queens. Most systems of performing these beekeeping procedures depend upon the time element to allow the intermingling or acquirement of a common odor.

The scent gland is also used by bees when swarming, the odor enabling them to keep together, and as the cluster starts to form, the bees on the edge of the cluster or near the queen expose the scent gland while fanning vigorously, throwing the scent back of them to attract their comrades and sometimes other bees, even virgins on their mating flights and drones of other colonies that happen to be flying in the vicinity. Also when the swarm enters a new home or when shaken in front of the hive, the scent gland is visible as a glistening white spot near the tip of the abdomen, when the bees line up and fan.

Exposure of the scent gland has a practical significance when one is examining a colony that happens to be queenless, for then the bees will soon set up a loud roar, due to the vibration of the wings. If one looks carefully, he will see the exposed scent gland of the fanning bees. It is thought that queenless colonies sometimes attract a queen to their hive by this method. In queen rearing manipulations where the colony is deprived of its queen, a queen excluder should be placed on the bottom or front of the hive to prevent a young queen that may be returning from a mating flight from entering

the wrong hive and destroying the developing queen cells.

It is the opinion of v. Frisch (1950) that scout bees that have discovered a good source of nectar or an artificial feeding place will expose the scent gland while flying over the feeding place on the return or while feeding, thus leaving an odor near or on the feeding place. How effective this is may be a question since it would seem that such an odor would soon be dispersed unless it were actually incorporated into the food. I have failed to observe this exposure at feeding places.

It may be well to suggest that bees fan on other occasions but without the scent gland exposed. They fan in the cluster to create heat, but on the other hand they fan to cool the hive when the temperature inside the hive gets near 95° F. or above. At least two writers have made claims that bees even store water in the cells to evaporate it and thus cool the hive. It would seem a little difficult to determine whether this is true or whether evaporation of stored water is just a natural result of the fanning for ventilation purposes. Of course, bees fan to drive off excess water from nectar to ripen it into honey. As will be mentioned later, certain sounds or alarms are made by fanning of wings.

While the odor of the queen is important in recognition and attracting the workers to her, there is still some question as to whether it is her odor alone that keeps the bees informed of her presence. Butler (1954) suggests that either the bees are informed of her presence by a specific queen odor that permeates the hive or indirectly that bees recently in contact with her in some way inform the others of her presence, this information being passed from bee to bee at frequent intervals, at least every thirty minutes. His recent experiments seem to indicate that worker honey bees actively seek a "queen substance" from her body, of which an adequate supply inhibits the production of queen cells and possibly the development of laying workers.

In view of these observations certain points come to my mind. Although the queen odor is potent, actually it cannot be too stimulating when we note that as a queen crawls over the comb, workers are not attracted to her and do not turn to face her or become a part of the circle of "royal attendants" until

she comes within about one-half inch of each individual worker or is practically touching them. Even then an occasional worker (Fig. 1) will remain facing away from the queen for several minutes, even though the worker's body is partly within the circle. Another point that leaves me wondering is that at times, especially in the fall when brood rearing is over, the weather is just cool enough to inhibit flight, and there is a loose cluster, one will notice that at times for more than an hour there is no movement of workers except those in the more central group where some heat is being produced. The bees in the outlying positions of a glass observation hive remain motionless, sometimes with the queen among them, completely away from the center of the cluster. Under these conditions at times there is no "cross-country" movement of workers to convey information. Do the bees near the queen have certain telepathic equipment? Or are there certain "control bees" that know the conditions of the hive? Possibly some clue to this situation will be indicated in another portion of this article.

Communication by Sounds

If anyone is in doubt as to whether honey bees can communicate by sounds, he should hold his ear close by a screened package of bees. Sounds of various tones or intensities and of duration will be heard. If still skeptical, one should listen carefully to the pipings of the queen and the responses of her virgin queen daughters in the cells. Or pin a bee to the frame or comb and note how soon other bees come to the rescue in response to its call. Yes, there are sounds in beekeeping and they have been studied, but there isn't room to report on them in this paper.

Grooming Invitation Dance

Without doubt, the most fascinating means of communication by honey bees is by dances in which the bees move about in various directions with variable body movements. In a Czechoslovakian bee journal in 1929, Haydak apparently first described, in an essentially correct manner, a "shaking" dance in which workers by shaking movements of their body actually attract other workers to clean their bodies. Eckert (1933) wrote of "health officers," apparently describing the activities of the "groomers" although he did not include the "invitation" by the bee being "inspected." His descrip-



Fig. 1. The queen and her circle of "royal attendants," usually 12 or 13 in one place when she is resting, less when moving, 8 or 9 when egg laying. But here one of the 6 drones (parts of 3 others) visible in the picture is "out of place." Many instances of contact by antennae may be observed. At the left of the queen one worker could be accepting another's "grooming invitation," another could be "spirit-tapping" a drone.

tion also apparently included a part of the "massage" dance of Haydak. In 1945, Haydak's story covering the dances of bees was republished in this journal. For some inexcusable reason, Milum (1947), apparently not having noted Haydak's article, wrote of this "shaking" dance as a "grooming dance" or "invitation." While I have been given credit in some publications for first describing the activity, apparently this should go to Haydak, but the name that I gave seems to be more appropriate. According to Leppik (1953), this is the "Putztanz" of v. Frisch, but I have not found his description.

Briefly, the grooming invitation may be described as a rapid shifting of the body, alternately to the right and to the left, while one of the second pair of legs is thrown upward beside the thorax and drawn down over the hairs in a comb-like motion. Thus an unstable side-rolling motion is given to the body, first to one side and then to the other, which probably has often been mistaken for one of the forms of motion used to create cluster heat. The dance at first is very moderate, but if no "barber" or "groomer" accepts the invitation, the movement becomes more vigorous until attention is given. An accepting groomer usually starts to work by climbing over the abdomen from the rear, pushing the mandibles and head beneath the wings with very little grooming until the constriction between the thorax and abdomen is reached. A short

time is spent in grooming in this region with a concentration soon on the hairs of the thorax behind the attachment of the wings. The actual work seems to consist of combing the hairs between the mandibles although at times there seems to be an actual "nipping" or "clipping" action. At intervals during the grooming act the "barber" backs up slightly and seems to be cleaning her mandibles with her front legs. While Eckert reported "a minute and a half or more" for one grooming act, my first report indicated that as long as six and one-quarter minutes was spent in grooming one bee. In 1953, I gave further information on this grooming act. Working with marked bees of known ages and different races, I have observed that grooming is generally on and by bees of hive age, with the "grooming invitation" made as early as one day of age, and accepted by bees as early as two days of age. Field bees in summer seldom perform "barbering" duties, yet grooming and grooming invitations may continue long after the cessation of brood rearing in the fall. It should be remembered that fall reared bees are still physiologically "young." If a young bee happens to be out of position in the hive and issues its grooming invitation among a clustered group of old bees, it may receive no attention at all or if so only for an instant, in which case it will continue to dance in the area or move elsewhere until its invitation is

accepted. Sometimes in crowded portions of the cluster, the response to the invitation is not immediately accepted and if and when so, the acceptor must have room to get its head beneath the wings or it will continue grooming only for a short period. Grooming is seldom performed on field bees, they doing their own cleaning activities, except the removal of propolis from the pollen baskets.

It seems to me that a more significant fact has not yet been mentioned. Eckert wrote that "when the examiner has finished with one bee, it usually hurries to another and begins another inspection." In my 1953 article I stated that grooming may be performed by "general groomers" without invitation and upon a number of bees in succession. I have noted grooming by one individual for as long as 31 minutes. In another instance one groomer "barbered" 26 bees in 25 minutes. Since grooming is chiefly performed on the thorax, with concentration on the heavily haired areas immediately back of the wing bases, a question is suggested. Are the groomers simply removing the excess hairs because they may be a flight hindrance? Or is it possible that the hairs are being collected for some other use? Or is some substance being secreted (as in termites) which has a useful purpose in maintaining the colony organization? Thinking along these last two lines, I have attempted to locate the reason but so far have not been successful. However, I am of the opinion that this diligent action must have a definite and useful purpose which some human observer will eventually fathom.

"Massage" Dance

A "massage" type of dance was described by Haydak (1945). Since I am not sure that I can recognize this dance, the brief description here is condensed from that of Haydak. It seems that the action starts by one of the bees bending its head in a peculiar way which attracts other bees who excitedly investigate the body and legs of the affected bee using in a "massage" manner their antennae and front legs. Later on, the original bee extends the mouthparts in a series of movements which gives the impression that it "has cramps of the tongue," with the "massage" treatment by the others continuing until the "sick" bee begins to clean itself in a normal way, finally crawling quietly away. It is apparent that this action is definite-

ly different from the "grooming invitation" dance, but may be confused with it by a casual observer. Haydak says that the meaning of this dance is not clear. It is possible that this is an action by bees that have come in contact with some offensive material that is being removed by the "massage" treatment. It is not a treatment given to ordinary field bees for that is accomplished by self-cleansing operations except for removal of propolis and occasionally of sticky pollen on certain inaccessible parts of the gatherer's body.

Orientation Dances

As early as 1788, the Reverend Ernst Spitzner observed and wrote of bee dances. "If a bee has found somewhere a large supply of honey, she informs the others of it upon her return in a peculiar manner. She waltzes around for joy among them in a circle, from above downward and from below upward, in order without doubt, that they may notice the scent of the honey on her; for they follow her in large numbers (?), when she leaves again." Apparently Spitzner had observed the "tail-wagging" (Schwanzeltanz) of Frisch (1920), but he was in error in stating that the bees stimulated by the dancing bee followed her to the field. One only needs to watch a dancing bee for a few moments during good flight weather and it will be noted that one or more dance fol-

lowers soon leave the dancer and make their way rapidly to and out the entrance, while the dancer may continue on for some minutes before unloading and may not even return to the field although she commonly may make several succeeding trips.

Unhoch (1823) and others have also described the dances of bees but the reports of v. Frisch (1920-1923) refocused attention upon them for the observations of the previous writers were not generally known. Von Frisch described the "round" dance as that of nectar carriers and the "waggle" or "wagtail" dance as that of pollen carriers. In 1923, Park reported that waggle dances were performed by carriers of both nectar and water, as well as pollen. I have observed a propolis carrier that did at least six wagging runs before being relieved of its propolis. In 1945, Haydak wrote that only one of several pollen carriers acted according to the book.

In 1946, v. Frisch assigned waggle dances to bees working sources 100 or more yards away and round dances to sources less than 100 yards distant. He reported that approximate distances and particular directions of the collecting sources beyond 100 yards are indicated by the frequency and direction, respectively, of the waggle runs on the comb surface, this being possible because of the ability of the bees to observe polar-

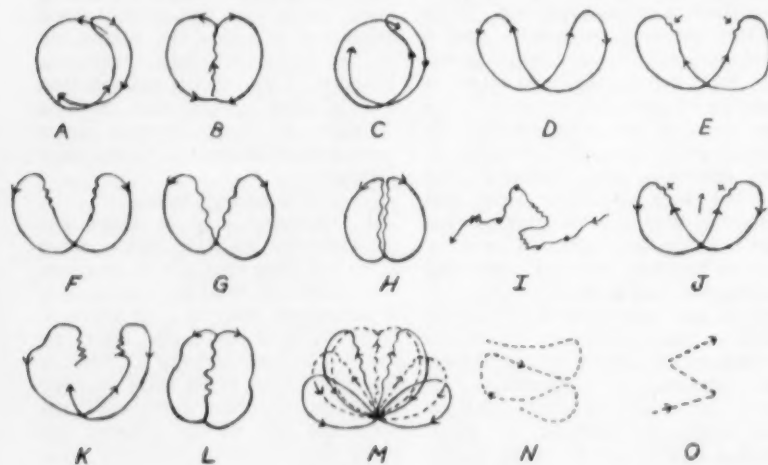
ized light when a patch of blue sky is visible to them.

Von Frisch found that the direction of the straight runs in the waggle dance indicated the direction of the source of food in relation to the direction of the sun. In the hive where the dancing bees could not see the sun, the bees danced as if the sun were at the top of the comb. If the bees are collecting at a source between the hive and the sun (toward the sun), then the straight wagging runs are straight up on the comb. Thus as the bees continue to gather nectar or pollen from a given source, the angle between the upright on the combs and the direction of the wagging runs is the same as the angle between the sun and the feeding place with the hive as an axis. I have observed bees carrying green pollen doing wagging runs straight up on the combs at 8 in the morning, 45 degrees to the left at 10 A.M. and 90° at noon. It is assumed that the bees of the small observation hive were all gathering pollen from the same source.

Von Frisch found that at 100 meters (1 meter equals 39.37 inches) there were 9 to 10 complete cycles of the dance within 15 seconds; at 200 meters there were 7; at 1000 meters (1 kilometer—0.6 miles) 4½; and at 6000 meters, only 2. In his lectures he states that with a stopwatch in hand he can tell how far away and in what direction the bees are feeding on sources of food supply planted secretly by his students. Von Frisch (1952) states that there are some slight variations between individual bees, those of different colonies, and with the direction of the wind. A head wind on the way to the feeding place slows the dances (increased distance indicated), with a tail wind having the opposite effect. If the feeding place is uphill, more slowly they dance, downhill faster.

On the other hand, when a comb is removed from the hive and held with the sides horizontal instead of vertical and a bee dances on it, or on the flat surface at the entrance of the hive, then the direction of the wagging runs is the same as the direction of the food source. Von Frisch states that the bees apparently rely on the direction of gravity, orienting the dances on the vertical walls of the combs at the same angle they have flown with respect to the sun to the feeding place.

The story of round and waggle dances was revised again when Tschumi (1950) found that when the



COMMUNICATION DANCES

Fig. 2. Sketches of communication dances of honeybees reproduced from diagrammatic sketches as shown by the authors indicated. A-B (v. Frisch 1920-3, 1950). A—Round dance, B—tail-wagging (wagging) dance. C-H (Tschumi, 1950): The transition of round dances to the sickle dance and from sickle dance to the waggle dance. C-D—Round and sickle dances at 10 meters (1 m. equals 39.); E—Prevailing sickle dance occasionally with wagging movements, at 14 to 50 meters; F—Most sickle dances with 2 to 3 wagging movements; G-H—wagging dances with more or less divergent wagging stretches. I-L (Hein, 1950, fig. 1-4): I—Directed shake dance at a distance from the feeding place of 2 meters (full stoop for giving nectar); J—Direction showing sickle dance at distance of 8 meters, with short shake dances at K; K—Transition of the sickle dance from figure-of-8 dance at 20 meters away from the feeding place; L—Type of figure-of-8 dance at 30-50 meters distance, transition to the tail wagging dance. M—Diagrammatic sketch of possible transition from a sickle or crescent dance to the waggle dance, as shown by Milum before a meeting, March 25, 1953. N-O—Warning and alarm dances (Leppik, 1953); N—Winding dance; O—Staggering dance.

distance of the food source is more than 10 meters but less than 100 meters from the hive the bees begin to form a "Sicheltanz"-sickle or crescent dance, in which the runs describe variously bent figure 8's, with the circle being closed as in the round dance. The direction of the source is indicated by a line drawn through the crossing point and equal distant between the ends of the crescent, this corresponding to the vertical line on the comb by bees in the wag-tail dance. Beyond 14 meters, the dancing bees introduce wag-tail movements at the corners of the crescent, the number being 2 to 3 at 50 meters. The number of wag-tail movements increases as the distance increases and the opposite ends of the crescent come closer together, with some divergence in the straight runs after right and left turns near distances of 100 meters, but beyond 100 meters the crescent dance is transformed into the typical wag-tail dance. The observations of Tschumi thus indicate that the crescent dance occupies an intermediary position between the round and the wag-tail dance.

In Experientia (1950), G. Hein, reported his observations on Dutch bees to find out whether different behaviour could be related to differences of races. He describes a "pull dance" (Rucktanz) as distinct from the tail-wagging dance, with the bee swinging her whole body to and fro. He found isolated "pull dances" at a distance of 2 meters from the food source. At a distance of 8 meters sickle dances also appeared, combined with short pull-dance movements at each point of the sickle before the turn-round. At distances of 20-50 meters, according to Hein, sickle dances change to figure-of-eight dances with a pull movement in the middle of the 8, which gradually changes into the tail-wagging dance. All of these dances indicate the direction of the food source. Hein also says that frequently several dance forms occur indiscriminately. In 1952 v. Frisch indicated that these differences of expression are racial. He states that this theory received "strong support" through observation of a hybrid colony with feeding place 10 yards from the hive, when only the Italian bees did the sickle dance.

Your present author is still skeptical of some of these reports, especially as to the variations observed. It seems entirely possible that some of these asserted differences are ac-

tually a matter of interpretation by the individual observers. A dancing bee is an elusive thing as far as following its gyrations is concerned and descriptions of two different observers of the same act might not be entirely alike. The "waggle" dance can be seen in a glass observation hive or on the surface of combs when removed from a hive at any time when bees are actively collecting nectar and/or pollen. However, those who seek to observe the "crescent" dance must remember that in many locations without artificial food sources the possibilities of bees in the observation hive working sources under 100 yards are extremely slight because of the lack of near nectar or pollen bearing flowers. However, bees also perform this dance while carrying water. I have seen it for near sources as well as for bees carrying green grape pollen from a distance of 30 yards. As previously indicated the angle between the loops of the crescent runs decreases as the distance increases. One, with a triangle in hand, can easily note difference in the angles which are often quite constant but different for individual bees in an observation hive that are collecting different colors of pollen, quite possibly from limited sources due to the directions obtained from the scout bees from a particular hive that first visited the given source.

As to the round dance we must admit some questions. Actually we cannot assert that we have actually seen it. But we have seen occasionally a "crescent" dancer that when it reached the cross-over point of the figure eight, instead of actually crossing over to the other loop, continued on around the same loop, thus giving an impression of a "round" dance. By means of a "figure 8" made of wire or a series of drawings, (Fig. 3-m) one can easily demonstrate how crescent dances gradually change to waggle dances as the distance increases, i.e. by the angle between the loops decreasing to zero, whereupon the waggle-runs of each loop coincide with the turns in opposite direction with alternate runs.

The gradual change from a crescent dance to the true waggle dance appears to be entirely logical, but to change an asserted round dance into a crescent dance is another matter. Using a looped wire to represent a circle dance, I cannot by any manipulation change it into a form or figure representing a crescent dance without a sudden and drastic manipulation which does not agree with

the gradual change of the crescent to the waggle dance as the distance increases.

D-VAV, "Spirit-Tap" or "Pep-Tap" Dance

Another type of dance which at this time is not completely understood is one in which a worker, while usually contacting another worker with its antennae but more frequently by grasping with its front legs, vibrates its abdomen rapidly in an up and down direction (dorsal-ventral abdominal vibration or D-VAV using the first letters of each word) some 7 or 8 times* in about eight-tenths of a second, then moving on to repeat the process at varying intervals. Probably one of the first descriptions of this dance is that of Haydak in 1929, repeated again in 1945. He suggested it as being a "joy" dance, a "good-time" dance or "dance of contentment." However, v. Frisch (1923) called attention to "trembling bees" (Zitternde Bienen) with a reference to "trembling movements" (Schüttelbewegungen) described by others (1905). Our interpretation of these dances as described by v. Frisch and the previous authors leads us to believe that they do not conform to the D-VAV pattern. The conclusion of v. Frisch was that they mean nothing in "bee language."

In 1953, for the D-VAV dance I also proposed the name of "spirit-tap" or "pep-tap" dance. While D-VAV (dorsal-ventral abdominal vibration) correctly describes the dance, "spirit-tap" seems to imply that herein lies the "spirit of the hive," and so I believe. Our observations cited herewith will tend to confirm this supposition. But first, let us remind you that others have written of "the spirit of the hive" and "control bees." In his interesting book, "The Spirit of the Hive," Dallas Lore Sharp (1925) asked the question as to wherein the colony its spirit lies, but never really answers it for in one place he says, "It is the worker who knows and seems to bear the burden of the hive." In speaking of the winter cluster, he writes, "And the yeast is the queen. Very much alive at the middle of this drowsy, winter-drugged crowd stirs the queen, restless, impatient, prying, pushing among her people,

* Hereafter the use of the words, "tapping" and/or "D-VAV" will refer to the succession of 7 or 8 individual vibrations as a whole. The plural form of "tappings" will refer to a repetition of the series of 7 or 8 with a pause between the groups of vibrations.

rousing them from torpor, compelling them to follow and feed and guard her, not a thorn in their flesh, but very much of burr in their bed."

As for control bees, Latham (1949) stated that between 12 and 14 days of age, workers enter a "golden age" period as free agents not tied to one duty, in which they are "control-bees" doing various duties, including general supervision and inspection of the hive. Latham is of the opinion that "the Spirit of the Hive" lies in the nervous systems of the control bees. While he assigns a lot of duties to his "control bees" which he says are such for five or six days, nowhere does he indicate how these bees can be identified except by age of 12-14 days. Hence I am inclined to believe that his "control bees" have not been specifically studied by any identification marks.

Returning to the D-VAV or spirit-tap dance, let us consider it further. Spirit-tap dancing is commonly exhibited by one or more workers independently at the same instant, with some exceptions. As previously stated, the dancer in question either touches its antennae to the body of another worker (occasionally a drone, and under special conditions to a queen), or more commonly it grasps the worker with its front feet on the head, thorax or abdomen, then vigorously vibrates its own abdomen alternately up and down (dorsal-ventrally) approximately seven to eight times in about eight-tenths of a second. There seems to be no response by the bee thus vibrated other than that it remains motionless and usually makes no attempt to move away. Only occasionally when complete contact is not made, the "victim" may move out of range and the vibration then is made on "thin air," so to speak. Usually, the spirit-tapper moves on to another bee before tapping again but occasionally under crowded conditions the process is repeated on the same bee. On the other hand, I once observed 25 consecutive spirit-tappings on a worker that was somewhat isolated from the cluster.

The tapping bees usually move about from one part of the cluster or the hive to another, tapping comrade after comrade at variable intervals. Tapping is exhibited on many occasions, at all hours of the day and night, in winter and in summer, with and without flight, and even in queenless colonies and in colonies at the point of starvation. In the latter case, on one occasion, with no honey in the combs and

brood being uncapped and carried out, several spirit-tappers were vigorously at work as if urging the completion of the job. Such observations lead us to disagree with our good friend Haydak that this is a "joy," "good-time" or "contentment" dance.

Further proof for this opinion is shown by other observations. In the previous paragraph, I said as I once did to the members of my beekeeping class that one could find these dances at any time. During the observation period, I was embarrassed for I could not locate any spirit-tapping nor could I for a period of two weeks thereafter (Oct. 10-23, 1950) and only occasionally during the following week. What were the conditions in this observation hive? I had been feeding it heavily. The hive was well stocked with honey. Brood rearing was practically over in October. The temperatures were ideal. The colony had no apparent needs or desires, there was no hurry and scurry, "not even a dancer was stirring." Later spirit-tapping could be found at will, and throughout the winter, spring, and summer. Intervals of little or no spirit-tapping have been noted under somewhat similar conditions during the fall of each year since 1950.

Spirit-tap and Waggle Dances Combined

Although I had observed spirit-tapping in my observation hive for several years, it was not until June 29, 1949 that I first observed a mixture or interspersing of waggle and D-VAV dances. Thereafter on many occasions when pollen and nectar were being carried, mixed dances have been observed, but there may be times when it cannot be found. On succeeding trips to the hive, the pattern of dancing by the same marked bee may vary considerable as to the respective amounts of spirit-tapping and waggle or other less distinct dances. A complete diary of some tappers makes an interesting story but a few combinations follow: 314 D-VAV and 78 waggle-runs in 21 minutes (some not counted), 48 D-VAV and 33 waggle-runs in 5½ minutes, 42 D-VAV and 3 "long waggle-runs" in 2 2/5 minutes, and 111 D-VAV and 120 waggle-runs in 11½ minutes. In the first case, the returning field bee started out with waggle-runs only, then shifted to alternating D-VAV and waggle-runs, with no waggle-runs after the first 100 tappings. To date I have not solved the mystery of these mixed or interspersed dances.

Are they "control bees" that are a bit confused or do they occupy a different and distinct niche in the economy of the hive?

Spirit-Tapping With Respect to the Queen

As a roaming tapper is journeying around the hive, if it comes to the queen and her circle of royal attendants, it usually will not even penetrate the circle although it may tap one of them. If it does penetrate the circle, the queen will not be tapped, but the intruder normally will quickly back from the circle as if to say, "Excuse me, I have no business in this royal society." However, these experiences have helped to prove one point, that is, even though a particular thing has happened many times, it may not always be the rule. I would have wagered after nearly two years of recorded observation that the queen was never spirit-tapped, but at 10:19 P.M., August 5, 1949, I decided to take a final look at my observation hive, when lo and behold, worker after worker was breaking through the circle of royal attendants to spirit-tap the queen. Within 5 minutes, 3 workers had tapped the queen a total of 7 or 8 different times. Later consecutive tappings were noted by different workers to the number of 6, 7 and 11 times. The tappings by the first two were mostly on the queen's head, but the latter tapper crawled over the head, thorax, and abdomen during the process. At 10:36, while the queen was laying an egg, she was tapped by 3 different workers. Often more than one worker tapped the queen simultaneously. Since no tapper tapped more than 2 or 3 times after leaving the queen, it may be an indication that queen tappers are not general roaming tappers. Tapping continued until 11:30, at least, when observations were discontinued.

On the second day, Aug. 6, observations in the morning and again in the evening indicated that tapping of the queen was in progress, once by one worker 7 times in succession. However, the discovery of a queen cell gave us a possible clue to the meaning of the unusual action. Apparently on August 7, the urge had subsided somewhat for only 3 tappings were noted in a 30-minute period at noon and the same number in a 5-minute period at 10:30 P.M. On Aug. 8, with continuous observation between 9:50-10:20 A.M. no tapping of the queen was detected, but at 10:20 the bees started to run

excitedly while wagging their abdomens. The runs were not the true "waggle-run" type for the workers were running here and there over the combs, gradually converging toward the entrance, with the swarm actually emerging at 10:25 A.M.

No further spirit tapping of the queen of our observation hive was seen in 1949, but on January 10, 1950, after the queen had been caged for a few days and then released, a D-VAV wanderer tapped the queen twice within a minute. A student has also reported the tapping of a queen soon after release from cage confinement. There was no further tapping of the queen in 1950, there being no preparation for swarming. However, there were instances each year of 1951-1954, all previous to or in relation to swarming. In 1951, no D-VAV of the original queen was observed before the emergence of the first swarm, but I observed tapping on workers over queen cells (sometimes on the cells themselves) and on two succeeding virgins that headed the second and third swarms. A third virgin was not tapped, apparently because we removed some of the brood and there was no further preparation for swarming. Although extensive observations were made on four more days in July and 68 days in September through December, in which D-VAV by roaming tappers was usually observed, there was none further on the queen. Somewhat similar results were observed in 1952-1954. In one instance, the queen of one observation hive was being tapped previous to swarming while those of three other hives were not, these not making preparation for swarming at the time. On one occasion I observed a single tapping of a laying worker surrounded by a circle of royal attendants.

Although many instances of tapping of queens and virgins during the swarming season have been cited, I am of the opinion that tapping of the queen is not a part of the preparation just previous to the swarm emergence. On two occasions I have heard one long shrill note or sound somewhat like but apparently different from the first note of the piping of an old queen but more extended. Its source I do not know. However, there is a general restlessness or excitement with increasing long wagging runs (not the figure-of-8) until a large majority of the workers are running here and there but rapidly converging toward the entrance with no attention being paid to the queen. In fact, some of

the drones and some of the older marked bees were not even stimulated by the excitement.

Age of "Spirit-Tapper" Bees

A question our readers must be wanting to ask is "What is the age of the bees that are performing D-VAV or spirit-tap dances. Working with marked bees of known ages or with young bees introduced into an observation hive by exchanging brood of another colored race, certain information has been obtained. In 1948, of 20 tappers, none of the Italians was under 10 days of age and all the Caucasians were at least 15 days old. On the other hand, a Carniolan spirit-tapped at an age of 45 and as late as 52 days in July. In 1949, Italians tapped as early as 12 days and Caucasians as late as 45 days. Another Italian marked and of definite known age was first observed to tap on July 25 and each day (except July 31) through Aug. 1 when it was last found in the hive. Thus it was observed to D-VAV on 7 of the last 8 days of its apparent 39 day life, but there probably was unobserved tapping at an earlier age. In 1950, one Italian of a group tapped at 9 days earliest age and the last Italian at 38 days of a total life span for the group of 42 days. In 1951, 4 Caucasians tapped after an age of 38 days, the last observed at 44 days of a 52-day life span. In 1952, a group of marked bees, spirit-tapped between the ages of 14 and 39 days of age, with all having disappeared by 40 days. Of some Caucasians wintered over in an Italian colony, some spirit-tapping by one was observed after an age of at least 151 days. It will be noted that the earliest age recorded was 9 days and the oldest 151 days for different individuals. The longest interval for the same bee actually noted was a period of 19 days. Possibly if a colony were made up of all young bees, spirit-tapping would begin at an earlier age since it has been shown that young bees will take over field duties as early as four days of age when older field bees are not available.

What is D-VAV?

In these observations, it has been shown that the D-VAV tapping by the workers in a colony of bees cannot be a "dance of contentment" for under "content" there is no dance. It appears that "spirit-tapping" possibly as "control bees," is a duty, not of young bees normally performing hive duties, but one of bees of field age or at least old

enough to perform that duty. At least during normal flying weather such seems to be the case although at night and in nonflying weather, even in winter, the activity may be continued in the hive. In "spirit-tapping" is there possibly a different tempo or a different number of taps under different circumstances with a different meaning attached? Since the bee or queen that is tapped seemingly makes no outward response is there any message at all or are we simply unable to read "the language"? Can it be that there are sounds connected with the rapid vibrations that are heard by the bees throughout the hive and not by humans? In the case of the queen, can it be that tapping of her is an urging to speed up egg laying? It could mean this after cage confinement of the queen and before swarming when egg laying has been curtailed. But tapping must have a different meaning so far as the workers are concerned. Or is there a general meaning under all circumstances such as, "Come on queenie or fellow workers, there is work to be done, i.e. a "spirit" or "pep" talk?

Rocking or Washboard Movements

Observations of "rocking" or "washboard" movements were made at least as early as 1905 (Leipziger Bienenzeitung 20:84, 125), later by Haydak (1929, 1945). This concerted action by a large number of workers may often be seen on the front of the hive on a hot summer afternoon or early evening. The movement consists of a swinging of the bodies forward and backward in unison, with the mandibles apparently scraping the surface of the hive as if to polish it. Similar action by a smaller number of bees or an individual worker may sometimes be observed inside a glass observation hive. There is little evidence that this activity has anything to do with communication except that bees are involved in a cooperative effort with other bees joining to emulate their sister or sisters once the movement is started.

Other Dances

In 1953, I stated that there are other undescribed dances the meanings of which are not known. Among these are long runs with wagging but without circling, as well as wagging while anchored to another bee, and wagging while pivoting on a spot. Leppik (1953) calls attention to "winding," "staggering" and "trembling" dances as "warning and alarm" dances. He also included in this group, the "spiral," "zigzag" and

"stop" dances of F. Schneider and the "Rucktanz" of Hein (1950). Lindauer (1949) wrote of the influence of scent and taste substances on the dances of bees. Leppik states that "awarm" dances before and after swarming, studied by M. Lindauer (1951) are orientation dances which serve a special purpose, although v. Frisch includes them with his "Werbetanzen" (orientation dances).

If we admit that all these special movements are readily observed and understood by the bees, then there is no reason to believe but that there are other movements that have escaped our attention. Indeed it is possible that still more marvelous stories are yet to be told.

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Beekeeping Dates to Remember . . .

by A. V. Mitchener

THIS is a condensation of a mimeographed release prepared by Professor Mitchener for distribution in Manitoba. It is just as useful to northern beekeepers in the States.

1. Experienced beekeepers should order package bees for delivery April 15 or as soon after as possible. Beginners, for delivery any time before the end of April. With the usual cycle from egg to emergence, it will be around the end of May before the first young bees will be in the field.

2. From records kept for 18 years, the average date for the first pollen (from hazel) is April 23 (variation April 13 to May 3); from poplar, April 25; from willow May 3; from dandelion May 14.

3. From records kept for twenty-eight years, the main flow begins, on an average, during the 4th week of June. Package bees, installed about April 15th, should be strong enough by this date to take advantage of the beginning of the flow.

4. The average for the peak of the flow is near the end of the third week in July. The end of the honey-flow, on the average, comes about

the end of the second week in August.

5. During the last ten years little nectar has been gathered after August 14th. Those who plan to dispose of their bees in late summer, and want to have the brood combs free of late brood, should dequeen 24 days before they use gas on the colonies. For instance colonies may be dequeen about August 1 if the bees are to be gassed August 24. Remember too, that marked queens are much easier to locate, when dequeening, than unmarked queens are.

Insecticides . . .

G. F. Knowlton, Extension Entomologist, Utah State College, writing with Lieberman, Bohart and Nye, reports additional studies on effect of insecticides on honey bees. On the basis of a limit of 10 per cent mortality, the following treatments are considered too toxic for honey bees: early morning sprays of TEPP 6 oz., malathion 10 oz., dieldrin 1 oz., heptachlor 4 oz., aldrin 2 oz., chlor-dane 1 pound, endrin 4 oz., and an

early morning dust of DDT 0.5 per acre. Treatments classified as safe in addition to toxaphene include morning sprays of DDT 0.5 pound and Systox 6 oz., and evening spray of TEPP 6 oz. per acre.

Other Utah circulars discuss safeguards during orchard spraying, raising bees and growing alfalfa seed without destroying pollinators. All are available from Utah Agricultural College at Logan, Utah.

Rothamsted Reports . . .

Nosema Control. L. Bailey has successfully tried transferring an affected colony to sterilized combs, with either $\frac{1}{4}$ to $\frac{1}{2}$ pint of 40 per cent formaldehyde or same amount of glacial acetic acid on rags in a super above the empty combs. Before bees of a colony are transferred to these treated combs, the floor board should likewise be treated. (Bee World).

Anesthesia before moving. C. R. Ribbands concludes that none of the recommended anesthetics prove of any consequence in discouraging bees from returning to their old location when moved a short distance. (Bee World).

From The Honey Plant Gardens

A new biennial

by Melvin Pellett



New Echinops with many large flower heads.

TWO years ago we received from our friends in the USDA several samples of Echinops seed labeled only by number. Since there are well-known honey plants in the Echinops group and since we had been seeking some large flowered variety which we heard grew in the old world, we were greatly interested in this seed. It was carefully planted in the spring of 1953 and a few plants each of four varieties grew which we tended through the summer. Echinops are either perennial or biennial according to variety and do not bloom the first season from seed. So we waited for the bloom

in 1954. But last spring only one of the varieties remained, apparently the only one of the four to be winter hardy in this climate.

We have or have had a number of varieties of Echinops in the test gardens, all of which are easy to grow and the flowers attract the bees most freely. Among the most common of those we have is the well known Chapman Honey Plant (*Echinops sphaerocephalus*), a biennial which grows vigorously five to eight feet tall with numerous flower heads humming with bees in July. Another is *Echinops ritro*, perennial,

growing for us three to four feet in height with blue flowers. It is less rank in growth and often the most desirable of the two for flower gardens.

Our new biennial is not as erect in habit as the others, but grew to two feet tall with many flower heads which were freely visited by both honey bees and wild pollinators. The flower balls are noticeably larger than those of our other varieties. Also the flower heads are adorned with protruding spines or prickles to make the plant distinctive and an unusual addition to the honey plant gardens.



Honey Wine Production in Costa Rica

by Roger A. Morse

The winery of Orlando Munoz in Costa Rica. Mr. Munoz is on the left. Note the small filter press in the foreground.

ORLANDO MUNOZ, a beekeeper with about 1000 colonies in Costa Rica, Central America, is now producing 50,000 liters (a liter is a little over a quart) of honey wine annually in a new plant. Munoz began producing honey wine about five years ago and the product has met with such success that he has recently expanded his operations. At the present time all the wine is being consumed in Costa Rica but Mr. Munoz hopes that someday he will be able to export his wine to this country.

The wine now being made is in

combination with the juice of orange, blackberry and cashew. Experiments are now underway to produce a banana honey wine. This honey wine, with a tropical fruit flavor which is of exceptional quality, is made by following the old formulas which have made this drink a favorite for many centuries.

Mr. Munoz was a recent visitor to this country, spending six months here as a guest of the Federal Government. During his visit he spent time with the various bee research laboratories in the country and also

found time to visit some of the commercial wineries in New York State.

Munoz has been keeping bees in Costa Rica for twenty-three years and over the years has exported large quantities of honey to this and other countries. Honey prices in Costa Rica as in this country have not been too high and the production of honey wine has proven to be a profitable enterprise. Mr. Munoz has made contact with honey wine producers in Europe and this country and has equipped a modern laboratory in which routine tests can be conducted.

Honey Is Kind to Your Heart

No. 7 - by D. C. Jarvis, M. D.

PERHAPS you have had a heart attack which has been discussed with you from the viewpoint of organized medicine. Let us consider what Vermont folk medicine has to offer you. Vermont folk medicine teaches that in the early part of our life we are quite active physically. As a result of this physical activity each cell in the body produces lactic acid, carbonic acid, phosphoric acid and sulphuric acid. Vermont folk medicine believes that the human body is an acid consuming, acid manufacturing and acid eliminating machine. The fruits, berries, edible leaves and edible roots are all acid as I test them. The breath from the lungs as it is exhaled is acid; the skin is acid and the urine is acid also. As a result of this large intake and output of acid intended by nature the blood is kept thin which allows it to readily pass through the tiny blood vessels of the body with less work required by the heart to circulate it.

If you wish to demonstrate this thinning of the blood by an acid, apply apple cider vinegar to a freshly made cut on your body. At once, for a few moments, the blood will thin and its flow will be increased. This first effect soon passes and in its wake the blood quickly stops bleeding from the cut. A strong firm scab will form due to the pres-

ence of potassium in the apple cider vinegar which has been carried over from the apple to the vinegar. According to Vermont folk medicine we thin the blood with acids we find in fruit, berries, edible leaves, edible roots and honey. We thicken the blood by eating protein food represented by eggs, fish, seafood, fowl and muscle meat such as beef, lamb, pork and ham. Our appetite, if we listen to the instinct it gives us, tells us whether we need honey, fruit, berries, edible leaves and edible roots with which to thin the blood or whether we need eggs, fish, seafood, fowl and muscle meat to thicken it. This belief represented by the above has become a part of our Vermont food customs. Cranberry sauce which contains four different acids is served with fowl; apple sauce which contains malic acid is served with pork or ham; mint sauce which has a vinegar base is served with lamb; lemon is served with fish or other seafood and mushrooms which contain citric acid are served with steak. Vermont folk medicine tries in these food customs to keep the blood thin by means of the acid taken with these protein foods and to offset the thickening effect on the blood by these protein foods.

As the years pass we are apt to be less active physically with the result that we manufacture less acid with

which to keep the blood thin. We are apt to continue the daily intake of protein food represented by eggs, fish, seafood, fowl and muscle meat. We fail to take by mouth the acid needed to replace that manufactured by the muscles when we are physically very active. There is a rule in Vermont folk medicine which teaches that when an individual reaches 55 he must begin to take an acid by mouth. When a man exchanges physical work for mental work so that physical activity becomes less and mental activity more then he should begin to take honey each day if he has not done so before for the acid and potassium it contains. If his physical activity further lessens he should increase the daily intake of acid by adding two teaspoonfuls of apple cider vinegar and two teaspoonfuls of honey to a glass of water at each meal. This is taken during the meal as one would a cup of tea or a cup of coffee.

A heart attack is an alarm reaction in your body. As an alarm clock awakens you to the need of rising so the alarm reaction in your body represented by a heart attack awakens you to the need of a daily intake of apple cider vinegar and honey in order to change the blood so that it passes easily and quickly through the smallest blood vessels and lessens the work of the heart. You should also study your daily food intake in order to learn whether you are taking each day too much protein food represented by eggs, fish, seafood, fowl and muscle meats and not enough honey, fruit, berries, edible leaves and edible roots.

Recipes---

Ladies, do you have favorite honey recipes? Send them in. Your subscription will be credited an additional three months for each recipe published.

SILVER TROPHY AWARDS AT NATIONAL HONEY SHOW

Recipe for the BLUE RIBBON HONEY NUT CAKE

2 cups sifted cake flour	1/2 cup honey
2 teaspoons baking powder	3 eggs
1/2 teaspoon salt	1 cup finely-cut nut meats
3/4 cup butter	1/4 cup milk
1/2 cup sugar	1 teaspoon vanilla

Sift flour once, measure, add baking powder and salt, and sift together three times. Cream shortening, add sugar gradually, and cream thoroughly, then add honey in thirds, beating well after each addition. Add 1/2 of flour and beat until smooth and well blended. Beat eggs until thick enough to pile up in bowl; add to cake mixture and beat well. Add nuts. Add remaining flour in thirds, alternately with milk in halves, beating very well after each addition. Add vanilla. Bake in greased 9 x 5 x 3 inch pan in slow oven (325° F.) 1 hour and 25 minutes or until done. Frost if desired.

BLUE RIBBON NUT-DIP ORANGE DROPS

These crisp honey drop cookies are rolled in nuts just before baking.

Sift together.....	2 cups sifted Pillsbury's Best Enriched Flour
	1 teaspoon soda
	1 teaspoon salt
Cream.....	1/2 cup butter
	1/2 cup shortening; add gradually
	1/2 cup sugar, creaming well
Add.....	1/2 cup honey
	1 egg
	1 teaspoon grated orange rind
	1 teaspoon orange juice; beat well
Blend in.....	dry ingredients gradually; mix thoroughly
Add.....	1/2 cup walnuts, chopped. Chill.
Drop.....	by rounded teaspoonfuls into additional chop-
	ped nuts (about 1 cup); roll to coat all sides
	Place on greased baking sheet about 2 inches apart.
Bake.....	in moderate oven (375° F.) 10 to 12 minutes
	Cool before removing from baking sheet.

Above cake and cookies won top awards at the National Honey Show using Helen's Minnesota Choice Grade Honey, in both recipes.

HONEY GLAZE

1/2 teaspoon unflavored gelatin	2 1/2 cups confectioner's sugar
1/2 cup water	1/2 teaspoon salt
1 tablespoon liquid honey	3/4 teaspoon vanilla

Combine gelatin and water, add honey, and heat over hot water until warm. Add sugar, salt and vanilla; stir until smooth. Keep the glaze warm over hot water, dip the doughnuts in it, then place them on a rack to dry. Makes enough for 16 doughnuts.

(From Home and Garden Bull. No. 37, U.S.D.A.)

A Practical Way to Use Nucs

by Julius Lysne

A SMALL hive holding four or five standard combs is the conventional "nuc," but the cost of such hives is a consideration and there is always the problem of wintering such small units. We have found it is best to use a standard hive body of ten combs and this makes uniting, requeening, and wintering easy.

To establish the system in the spring, simply place two combs of brood in each nuc body and introduce a laying queen from the South, in this section about the first week in May. To feed, fill several combs with sirup. The bodies used are full depth extracting supers with bottom boards and covers.

When swarm cells begin to appear in a colony, the body with the cells is exchanged for a nuc, and the colony is thus requeened. In two weeks the body which has been removed should have a laying queen. It may

then be united with any colony requiring requeening. The body containing queen cells should be set aside again as a nuc. This is an aid in swarm control.

If desired, a breeder colony may be used. A colony with consistent high production is best. The breeder colony should be very strong before any attempt is made to produce queen cells. To produce cells, simply see that each of its two hive bodies has eggs and unsealed larvae. Separate the two bodies with a queen excluder. The queenless body will produce the best of cells if the colony is strong. Unless there is a honey-flow the colony must be fed. No attempt should be made to raise queens until warm weather—about June 1, in this section.

The breeder colony must be kept strong by taking sealed brood from other colonies from time to time.

When one body has sealed cells, this body from the breeder colony is set aside as a nuc, and the virgin allowed to mate in due time. It is then ready to unite with any colony to be requeened. This system is kept up until all colonies are headed by a good queen.

No attempt need be made to destroy the old queen when requeening. When the beekeeper is through requeening he will have no nucs left with which to bother. This is the ideal system when honey production is the goal. One nuc for every five colonies is required. By getting queens from the South each year, new blood is introduced and stock will not run out.

Nucs of one story may be wintered if desired, and are ideal to unite with a weak colony late in April. Use the newspaper plan of uniting and be sure not to stir up the bees in the process. If care is used, the result is a colony second to none.

The prime advantage of the system is that there is no grafting of cells. Cell building is left to the bees—who really know the job best.

Wisconsin



Use standard bodies like this to establish nucs for requeening.



Large crops like this are the rule if colonies are kept strong by regular requeening.

HONEY APPLE CRISP

- | | |
|--------------------------------------|-------------------------------------|
| 2 cups pared and sliced apples | $\frac{1}{2}$ cup all-purpose flour |
| $1\frac{1}{2}$ teaspoons lemon juice | 2 tablespoons brown sugar |
| 2 tablespoons sugar | $\frac{1}{2}$ teaspoon salt |
| $\frac{1}{4}$ cup liquid honey | 2 tablespoons butter |

Place apples in a shallow baking dish. Combine the sugar, lemon juice and honey. Spread over apples.

Mix the flour, brown sugar, and salt; cut or work in the butter until mixture is crumbly.

Cover apples with the flour mixture and bake at 375° F. for 30 to 40 minutes or until the apples are tender and the crust is brown. Good served with whipped cream and a dash of cinnamon on top.

(From Home and Garden Bull. No. 37, U.S.D.A.)

CORN MUFFINS

- | | |
|--|---------------------------------|
| $1\frac{1}{2}$ teaspoons baking powder | 1 egg, well beaten |
| $\frac{1}{2}$ cup sifted flour | $\frac{1}{2}$ cup milk |
| $\frac{1}{2}$ teaspoon salt | $\frac{1}{4}$ cup honey |
| $\frac{1}{2}$ cup corn meal | 3 tablespoons melted shortening |
| $\frac{1}{4}$ cup prepared apple | |

Sift flour once, measure, add baking powder and salt and sift again. Add corn meal. Wash, pare and cut apple into eighths. Remove core and cut crosswise in very thin slices. Combine egg, milk, honey and shortening. Add all at once to flour-corn meal mixture, stirring only enough to dampen all flour. Fold in apple. Bake in well-greased 2-inch muffin pans in hot oven (400°) 20 minutes or until done.

(From American Honey Institute)

PUMPKIN CHIFFON PIE

- | | |
|---------------------------------|---------------------------------|
| 1 tablespoon unflavored gelatin | 1 cup milk |
| $\frac{1}{4}$ cup cold water | $\frac{1}{2}$ teaspoon cinnamon |
| 1 cup canned pumpkin | $\frac{1}{2}$ teaspoon salt |
| 3 eggs, separated | $\frac{1}{2}$ teaspoon ginger |
| $\frac{1}{4}$ cup honey | $\frac{1}{4}$ teaspoon nutmeg |
| 1 tablespoon butter | |

Soak gelatin in cold water five minutes. Heat pumpkin. Combine beaten egg yolks, honey, butter, milk and spices. Add the pumpkin. Cook in top of double boiler, stirring constantly, about 3 minutes. Add soaked gelatin and stir until gelatin is dissolved. Cool mixture until slightly congealed. Fold in stiffly beaten whites of eggs. Fill baked individual pastry shells with mixture. Allow to chill until set before serving.

(From New Favorite Honey Recipes)

LEMON-HONEY CHIFFON PIE

- | | |
|---------------------------------|-------------------------------|
| 1 tablespoon unflavored gelatin | $\frac{1}{2}$ cup lemon juice |
| $\frac{1}{4}$ cup cold water | 1 teaspoon grated lemon rind |
| 4 eggs, separated | 9-inch baked pastry shell |
| $\frac{3}{4}$ cup liquid honey | 1 cup heavy cream, if desired |
| $\frac{1}{2}$ teaspoon salt | |

Soften gelatin in the cold water; set aside. Beat egg yolks and combine with honey, salt and lemon juice and rind. Cook mixture over hot water until thick, stirring constantly.

Add gelatin and stir to dissolve. Remove from heat and cool. Beat egg whites until stiff, then fold into the custard mixture.

Turn into a 9-inch baked pastry shell. Chill until firm. Top with whipped cream before serving, if desired.

(From Home and Garden Bull. No. 37, U.S.D.A.)



Honey Display Profitable . . .

Our main display of honey which was shown in Red Wing, Minnesota during National Honey Week consisted of honey from each beekeeper in this area who wished to be included in the exhibit. Extracted honey, showing the new Minnesota Grades was featured in the center of the exhibit. Chunk, comb, and granulated honey were displayed, an extracting frame of nicely capped honey which had won a ribbon at the State Fair and an empty extracting frame which had been through the extractor were shown in a rack as a sort of "before and after" feature.

An arrangement of some twenty floral source honeys also created much interest as well as our American Honey Institute Silver Trophy award and blue ribbons which we had won at the State and National Shows.

Samples of honey from our apiary were put up in 2-ounce bottles and these along with a copy of our prize winning recipes from the National Show were handed out from the check-out stations. Free samples of cakes and cookies which were baked with honey were served during the last days of the display and honey was given much free publicity in this manner. Our honey sales increased during the time of this display and we are still experiencing

a boost in the demand for our honey as the result.

A similar exhibit was set up in St. Paul during our State Convention. Our floral source display was even larger than the previous one, thanks to a number of friends who supplied us with types of honey which are not found in this area, including star thistle, orange and sage from California; tulip poplar, clethra, sourwood and lespedeza from North Carolina; mangrove from South Carolina; huckleberry and fireweed from Washington; crimson clover from Mississippi; lima bean, coffee blossom, mesquite, tupelo, and so forth, from various localities; and a jar of lavender honey from France.

It is a lot of work getting a display of this type ready, but there is a lot of satisfaction in watching all of the interest it creates, and the amount of honey it sells.

F. Q. Bunch, Minnesota

Bottom Boards . . .

To prevent bottom boards from rotting out the best thing I have found is to give them several coats of creosote with an ordinary paint brush before using. Give six or seven coats, allowing each one to dry well before applying the next. Of course, they are painted on the outside only. I also set my hives on two bricks which gives an air space underneath and discourages mice. I have some bottom boards which have been in use since 1947 and are still good with no more applications of creosote since the first one.

R. C. Burcham, Illinois

You Asked for It . . .

If you have any questions for which you need an answer, address them to Frank E. McLaughlin, American Bee Journal, Hamilton, Ill. He will give you the answer himself, or he will get you an answer from the best source possible. This service is free.

Chris L. Specht, Illinois

I would like to know how to control swarming. I have tried producing comb honey, without success, and I think my trouble is swarming.

There are several ways to control swarming. I think the best one, in comb honey production, is go through

the colonies once a week and remove all queen cells. Give the bees room too and provide some kind of top ventilation and some shade. It takes plenty of work and manipulation to produce comb honey. The bees must be strong and crowded down into small space when the comb honey supers are put on. Then they must be kept from swarming if you are to be successful.

J. P. Moore, Virginia

Some time ago an article in the Journal told of the length of life of the honey bee. It said that during the active season Italians live a shorter time than Caucasians, the

latter less than the Carniolan, but the Golden lives the longest. It also says that "the Italian colony produced more honey and reared more brood than the colonies of the other races—and the Golden Italian lived up to its reputation by producing the least honey of all." This seems contradictory. Which bee is the best honey maker?

The two Italians are the so-called Golden and the usual three-banded. The three-banded lived the shorter time; the Golden the longer. In my opinion, from experience in trying different races and strains of bees, the three-banded Italian is the best honey producer. The Golden is not energetic so they do less even if they live long. More improvement in the gray races however, may eventually give us fine bees, perhaps superior to the Italians.



ABIE STINGS SEZ:

Funny how everybody's talkin' about their winter loss, when it really ought to be called spring loss. If they'd left those few extra frames of honey last fall, or fed some last month, there wouldn't be so many long faces today.

Legume Acreages for Seed

The Marketing Service of the U. S. Department of Agriculture has presented its report on Field Seed Acreages during 1954:

Alfalfa	950,000 acres
Red Clover	958,000 acres
Alsike Clover	49,000 acres
Sweet Clover	248,000 acres
White Clover	24,000 acres
Ladino Clover	16,000 acres
Lespedeza	580,000 acres
Austrian Peas	39,000 acres
Crimson Clover	113,000 acres
Lupine	33,000 acres
Hairy Vetch	222,000 acres
Common Vetch	16,000 acres
Purple Vetch	22,000 acres

The acreages of all of these left for seed is much below the ten-year average acreage, except in the case of crimson clover and hairy vetch; for red clover it was about 50% of the average, probably due to the extreme drought in producing areas.

So far we have learned of no material advantage to bees from

Francis Henderson, Illinois

Here is our comb honey plan (please criticize): 1. Examine colonies as soon after February 1 as possible. 2. Give pollen feed to each colony three times beginning about March 1. 3. April 6 put old queen and 4 combs of brood on old stand. Give other hive body (mostly sealed brood) new queen. 4. About May 20 unite, allowing bees to select best queen. 5. Then crowd down to one story with comb honey supers. Give excess brood to colonies producing extracted honey for refill for winter stores.

About examining in February, do this just as soon as weather allows and still not chill brood. Use the pollen feed if you have to. In my location, pollen is available in late February and I don't have to feed. Dividing and giving second queen is



Toni Is Sold on Honey . . .

Charlotte Waldron, Malvern, Pennsylvania, shows here a likeness of Toni, her South American troupiel, who is sold on honey whether it is in the comb or the jar. He sells lots of honey to folks who stop in and are amazed by his beauty and vigor. He is also a reader of character. He dotes on children, especially babies, and approves of women as a rule, particularly blondes. He has been known to take a look at a male customer and leave the room in decisive haste, refusing to return as long as the man remains. He invariably takes to nice people who love animals, before they can open their mouths and say "Ah" when they see him. Toni has his own comb honey in the kitchen but that does not stop him from sampling any other honey which has not been put out of his reach. He eats extracted honey on his daily cereal but prefers sections every time. For the main course he enjoys drone brood and insists on honey for dessert. In the picture he has punctured the comb twice and has a big mouthful.

winter peas, lupine, and little from lespedeza.

Pounds per acre for 1954 show increases for alfalfa, sweet clover, white clover and ladino; the others showing a decrease from the ten-year averages.

Honey on Shoes . . .

In the early part of Italian shoe history, honey was the most important ingredient in the preparation of a brilliant shoe polish. It was, of course, mixed with other liquids.

(From St. Louis Globe Democrat)

okay. About crowding down and supering, make sure that the brood chambers are really full of brood. In uniting however, I prefer to remove the old queen myself.

B. M. Winter, Indiana

In spring, I found my bees were using the tops of the hives to crawl in and out and many were rebounding to the bottom board or ground and killing themselves. After removing the entrance closer they still continued to fly from the top. Should I have a top hole in the hive body when I adjust the entrance in fall?

Perhaps the bees got used to flying from the tops during a time when the reduced lower entrance was clogged or covered. To stop them using the cover exits, try to close the places where they get out so they will then return to using the

IN MEMORIAM

Jay Cowing

A lifelong resident of Jenison, Michigan and a pioneer leader in the state's beekeeping industry, Jay Cowing, 81, passed away on December 28, 1954. Mr. Cowing was a former railroad engineer, had been state bee inspector for 20 years and was a past president and life member of the Michigan Beekeepers Association. He was noted for transporting his bees to Michigan's upper peninsula for the clover season. His only survivor is his wife, Marianna.

lower entrance. Many beekeepers do use an auger hole in the hive body for a permanent top entrance. Never reduce the lower entrance so much however, that the bees can't use it when they prefer.

Gardner Shaw, Iowa

My bees are not working in the supers. What should I do about it?

There are several reasons for bees not going into the supers to work. If the super contains only foundation they do not like to use it until they must. Sometimes supers are given too soon and the bees continue to use the room in the hive body. If the supers are full depth, raise a couple of combs of brood from below into the super, placing the empty combs from the super down in the lower body. This bait quickly entices the bees into the super.



WILD PLUM

Paul Hadley's picture of wild plum serves to usher in our hopes for spring. Plum is a member of a long list of spring blooms whose total gives a mighty boost to brood rearing. Part of the value of a good location lies in the abundance of spring nectar sources. There are eight or more species of plum native to North America which are generally known as wild plums and there are few places where plums of some variety are not present. In wooded country the great family of spring bloom also includes the cultivated and wild fruits, willows, haws, redbud, dandelion, often a carpet of yellow. Strong colonies at this time of year often store some surplus over their needs which insures that brood rearing will not be curtailed before the time of the main flow.

Morse in New Post . . .

Roger A. Morse, assistant in apiculture at Cornell University, has been appointed to the position of Entomologist for the State Plant Board of Florida. He recently received a Ph.D. degree in apiculture and economic entomology while working under Dr. E. J. Dyce at Cornell. His scientific interests are honey wine and birdsfoot trefoil. He was for a time an official honey grader for the Finger Lakes Honey Cooperative at Groton.

Will We Go "Doggo" on Noggo

According to the Wall Street Journal, Noggo (pronounced "nawgo") is a new drink, just coming out. It is Grade A milk "spiked" with whiskey, brandy, rum or gin and flavored with hibiscus honey.

It seems a British dairy has permission to "brew" the mixture, or would it require more than "mixing"? We confess we do not know our mixes.

Laying Workers

by David A. King

SOME people can do anything and even the weather favors them.

I am not one of those people! About the time I got my first package hived and had settled down to waiting hopefully for the regular contented buzz of a happy, queen-right colony at work, the weather turned bad. It rained, it hailed and even snowed a few inches one night. When the storm finally ended, the temperature dropped below freezing for several nights. This killed much of the fruit bloom. But what about my poor bees with not even any drawn comb?

They managed to take in a few ounces of the sirup I had placed in a boardman feeder at the hive entrance, but the weather was so consistently bad they couldn't do much flying. After about five days, I opened the hive and, making sure the queen had been released, removed the queen cage. A quick check showed the bees had begun to draw some comb in spite of the bad weather.

The alfalfa, a very important local honey source, came into bloom but the weather was still so chilly that not too many bees got to work it before it had to be cut for hay. There was some activity at the hive entrance, though, so I thought they must be getting along fairly well in spite of the rough time they had had.

One week end about three weeks after hiving the package the weather was finally good enough so I dared to open the hive and leave it open long enough to make a real check-up. I was expecting to find a nice lot of drawn comb, a good regular pattern of new brood and perhaps even some capped brood. According to the books, they had had time.

But what a mess I found! Oh, sure, they had drawn a good bit of comb. A lot of it was capped over—with the domed, shot-like caps of drone brood in worker cells! Over the face of several of the center combs were dozens of pitiful attempts to construct queen cells over the drone brood. All in all, I had a perfect set of symptoms of laying workers! The new brood was in the scattered irregular pattern which is supposed to characterize brood from laying workers. Many cells had two or more eggs in them; there was no rhyme or reason to any part of it!

I was heartsick. According to the best authorities, the mess I had on my hands was worse than useless. All I could do was to start over.

Of course, if I had had another colony of bees at hand, I could have united my laying workers with this colony and maybe salvaged something. But I had only one colony.

My first idea was to order a new queen and try to persuade the bees to take her. When she arrived, I cautiously placed the cage with the outside card pulled off on top of the frames in the hive just to see what the bees' temper might be. They balled this new queen, cage and all. Fortunately they couldn't hurt her inside the cage, but they certainly were not ready to adopt a foster-mother. Don't believe all you read about bees having brains! Would a colony with any brains refuse to accept a fine new queen when they had been motherless as long as these had? I suppose the poor things thought the laying workers who had taken over egg-laying were doing an adequate job.

I ordered a new five-pound package of bees and bought a new hive. When this new package arrived, they proved to have suffered very heavy losses in transit—most of the bees were dead. I hived the few remaining in the new hive and wrote a letter to the shipper letting him know the condition of the package. He very promptly sent a replacement package, minus queen.

With these two packages, I succeeded in establishing a good, queen-right colony which I united with the laying-workers by placing the queen-right colony on top of the laying worker colony and placing a sheet of newspaper between them.

When I looked in a few days later, things were going well. The new colony had done a fine job of drawing comb—considering how weak they had been before the replacement package had arrived. What was more important, there was BROOD. It was in the regular, almost circular patterns that the books agreed was characteristic of a good queen.

Most of the drone brood had emerged and many of the cells had been filled with new honey. It looked as if I had surmounted another hurdle.

Highlights of the Federation Meeting

The culmination of a successful year for the American Beekeeping Federation and plans for a progressively better 1955 highlighted the twelfth annual meeting of this organization at the Sherman Hotel in Chicago, January 24 through 28. Upwards to 500 individual members and representatives of all phases of the bee and honey industry were there. They came from Massachusetts and Connecticut to California, from Florida to Oregon and from Louisiana to Minnesota, with three Canadian provinces represented.

Held in connection with the Federation meeting, were meetings of the Women's National Auxiliary, the Apiary Inspectors of America, the National Honey Packers and Dealers Association, the American Honey Institute, the Honey Industry Council, Bee Industries Association, and the American Bee Breeders Association.

The Cook-DuPage County Beekeepers' Association is to be highly complimented on their arrangements for the meeting. John Lis was in charge of arranging for the entertainment and other affairs necessary in conducting a meeting of this size. David Meineke, working with the Cook-DuPage Association, was instrumental in arranging for beekeepers, their wives, and Mrs. Grace to appear on fourteen different local and national radio and television programs during the four days of the convention. He also arranged for extensive newspaper coverage.

To aid in the publicity, David Meineke and associates selected a Honey Queen, Miss Monica Siegham, who added her charm and beauty to the publicity of the meeting, and was presented at the banquet on Thursday evening. The Cook-DuPage ladies also should be highly complimented, as they assisted in arranging trips, teas and entertainment for more than seventy ladies present at the meeting.

Favors at the banquet consisted of candy by Meineke, miniature hives by Cook-DuPage made by Wall-anches, and orchids for the ladies by John Lis. Favors of small skep banks were presented to all ladies at auxiliary meetings.

Preliminary investigations have been made on the possibility of uniform blanket insurance covering apiaries, bees, equipment, honey houses and contents, as well as public liability insurance on hives or apiaries on location or in transit.

The Bee Industries Association acted to continue support of the Federation on the same basis as 1954.

The Honey Packers and Dealers Association resolved in favor of continuation of present regulations for price support of honey and the subsidy programs. They decided to put into effect a one cent per 60 pound can levy on producer (voluntary) to be matched by one cent per can by the buyer, providing two-thirds of their members (by honey volume) agreed to enter into the arrangement.

Some \$2300.00 in the treasury of the old honey packers' organization was divided between the new packers and dealers' association, the Federation and the American Honey Institute.

The bee inspectors group favored uniform inspection regulations between the states, and general education of beekeepers in the possible use of drugs in combating bee diseases.

James I. Hambleton, before that group, recommended full cooperation in continuing embargoes against bees coming into the country owing to the general prevalence of adult bee diseases in European countries.

R. B. Willson replaced Alan I. Root as chairman of the over-all Honey Industries Council with R. H. Dadant as vice-chairman. Leslie Little, of Tennessee, is to be secretary. Theme of major work to be developed during 1956 was honey research. Continuation of the Government's honey price stabilization program on the same basis as 1954 was recommended. Members of the Council are R. B. Willson, Alan Root, R. H. Dadant, Leslie Little, Roland Stone, Henry Schaefer, Glenn Gibson, Woodrow Miller, and John Holzberlein.

American Honey Institute approved the work of Harriett Grace for 1954 and will continue with the same officers and members, except that R. H. Dadant was appointed to fill the vacancy caused by the resignation of L. C. Dadant.

In resolutions, the American Beekeeping Federation recommended the continuation of the National Honey Show; thanked Cook-DuPage Association for their efforts in making the meeting a success; recommended to the U. S. D. A. a survey of the volume of honey utilized in various distribution and consumption channels; expressed appreciation of the Eastern Regional Laboratory, Farm Bureau Federation, and others for their support; urged assistance for the city beekeeper hobbyist; favored retention of honey price support at the same monetary level as in 1954; recommended changes in selection of executive committee to allow part of the members to carry over from one year to the next to promote continuity; went on record opposing intrastate restrictions on free movement of honey; recommended to the U. S. D. A. provisions for price support for bulk comb honey on a trial basis; recommended research and a promotion campaign for honey; recommended removal of restriction of free movement of bees and equipment across state lines where same are accompanied by proper health certificates; recommended restrictions on export subsidy, and favoring such export contracts be followed by delivery of the honey within 60 days. Officers of the Federation for 1955 were selected as follows: President, Henry A. Schaefer, Osseo, Wis.; Vice Pres., S. J. Watkins, 715 Buena Tierra Drive, Woodland, Calif.; Secretary-Treasurer, Robert Banker, Cannon Falls, Minn. The Executive Committee is: Ray Reed, 1389 Frakelton Place, Los Angeles, Calif.; Wm. Wicht, 406 Miller St., Hattiesburg, Miss.; L. H. Little, 406 State Office Bldg., Nashville, Tenn.; Henry Hansen, Dakota City, Minn.; Grover Sanders, Grand Junction, Colo.; Glenn Gibson, Minco, Okla. Next annual meeting is tentatively set for Biloxi, Miss. in 1956. We hope later to present a number of addresses given before the convention.



From Here and There



Floridans Brave the Frozen North

Top picture, left to right: Jourdain DeMuth, Kenny Williams, Roy Novinger, John N. DeMuth, D. E. Sojourner. (Photo taken at home apiary for Starline Hybrid Program, Dadant & Sons, Inc., Hamilton, Ill.)

These five Florida beekeepers drove to the Federation meeting in January. Back home again they likely appreciate the deep South. Chaperoned by John DeMuth, they were on the road ten days covering a total of 3,434 miles. They drove home, non-stop, from Hamilton some 1,200 miles in 24 hours. Temperatures of 10 below, blizzards, and snow-covered beehives must be commonplace to them now as evidenced by the picture. Sojourner (President), Novinger (Secretary) and the DeMuths are all in the Florida Honey Cooperative at Umatilla, where members' honey is prepared for resale, mostly in steel drums, this year destined for Germany.

The above quintet visited with manufacturers and friends in Mahira, Georgia; Clarkson, Kentucky; Medina, Ohio; Wauwatown, Wisconsin, and Hamilton, Illinois. The roads were good, with a few exceptions, motels and food fine. They plan a similar jaunt to Mexico another year, if they can take time off from fishing in the bountiful waters of Florida. (In the meantime they keep bees and produce honey.)



New Officers of the American Bee Breeders Association

Center picture, left to right: Garnett Puett, Jr., Secretary; E. L. Garon, Vice President; W. W. Wicht, President; also retiring President, J. W. Newton and Vice President, H. C. Jensen.

Federation Officers and Queen

Federation Convention Queen, Monica Siegham, guards the 1955 Officers of the American Beekeeping Federation—left to right: Robert Banker, Cannon Falls, Minnesota, Secretary; Henry Schaefer, Osseo, Wisconsin, President, and S. Joaquin Watkins, Fruita, Colorado, Vice President. (Queen Monica was born in London, England; has lived here about 18 years. Maybe she should be called an International queen.)

Indiana

New Legislation

Senate Bill 99 has passed the upper house with only one opposing vote. This bill was prepared at the request of the Resolutions Committee at the Annual Convention last October. If this bill should be enacted, and all indications are that it will be, this will be the first change in our apary inspection laws since 1919.

Briefly the provisions of this bill are as follows:

1. All combless packages of bees and/or queens shipped or brought into Indiana from outside the state must be accompanied by a certificate of inspection issued by an official inspector of the state of origin indicating the apary from which the bees are taken to be free of contagious diseases. Inspection must be made within a 60-day period immediately previous to the date of shipment.

2. Bees on combs or used equipment will be admitted to the state only when accompanied by a permit issued by the Chief Inspector of Apiaries of Indiana. Such permits will be issued when the applicant has furnished the following information:

- A health certificate from all the applicant's apiaries.
- A statement of the proposed date of entry and a statement of the exact location to which the bees are to be moved, naming county, township and farm or property.

Should an inspection reveal that any colonies imported into the state are infected with disease, such colonies are to be destroyed immediately. The State Entomologist is authorized by this act to order the removal of any bees or used equipment brought into the state without a permit.

1955 Officers of State Association

President—Forrest Nicholas, Auburn, Indiana

Vice President—Ray P. Miles, Liberty, Indiana

Secy.-Treasurer—Gilbert Perigo, Indianapolis, Indiana

Director—Sidney Cress, Marion, Indiana

Director—Paul E. Champ, Twelve Mile, Indiana

Director—Ray T. Everly, Purdue University, Lafayette, Ind.

Director—Claude Rose, Madison, Indiana



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In our 40th year of producing and shipping we lay no claims to being the largest shippers, but when it comes to quality we claim to rank near the top. Prepared to load trucks by prearrangement. Express connection unsurpassed. Small lots parcel post. Our queens will be reared with Fumidil-B. as a preventive and control of Nosema, which in itself may tend to reduce early supersedure.

Increased production of Dadant's "Starline" Hybrids enables us to make Special Introductory Offer: On all orders for regular stock we will substitute ten Starlines (or 10% of order whichever is least), at regular stock prices. Clipped and marked FREE.

	Queens "Starline" Hybrids	Queens "Magnolias"	2-lb. Pkgs. W/Qs	3-lb. Pkgs. W/Qs
1-24	\$1.50	\$1.25	\$3.75	\$4.75
25-99	1.40	1.15	3.50	4.50
100-up	1.30	1.05	3.25	4.25

If packages are to have "Starline" Hybrid queens add 25c to each package.

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For fast uncapping use a MASTER Electric Uncapping Knife. Built for long, dependable service.

Your dealer stocks them.
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PACKAGE BEES and QUEENS "Italians"



Wilbanks offers you tested stock proven for honey producing ability and easy handling. Satisfied customers through the years assure you of the greatest value here.

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	1-9	10-up	Parcel Post Shipping Wt.
2-lb. pkg. with young laying queen	\$3.25	\$3.00	7 lbs.
3-lb. pkg. with young laying queen	4.25	4.00	8 lbs.
4-lb. pkg. with young laying queen	5.25	5.00	10 lbs.
Extra queens	1.10	1.00	Postpaid

Shipments by Express, Parcel Post or your Truck.

Package Bees F.O.B.—Include Postage for Parcel Post Shipments.

Quality Does Not Cost — It Pays

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Live delivery guaranteed on all shipments. 10% deposit books any order.	2-lb. pkg. with queen	\$2.75
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	4-lb. pkg. with queen	\$4.75

Special Prices to Those Who Truck.

Write for discount on orders over 25 packages.

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MEETINGS

Southern Conference Asheville Next

October 10-11, Asheville, North Carolina is the date and place where beekeepers and their families from all over the South and many northern states will gather for another big family reunion.

On October 12th, following the convention, a guided motor tour into the Great Smoky Mountain National Park, through the Cherokee Indian Reservation, is being planned. This will be described with accompanying photographs in a later issue.

An opportunity for all beekeepers to invest honey with the American Honey Institute is again being offered. The big honey show will be an interesting feature and you will want to buy some of that famous SOURWOOD honey native of this area. Watch the journals for feature articles on this unusual event.

A. D. Hiett

Ohio Short Course Columbus, March 22-23

The annual Ohio Farm and Home Week Beekeepers' Short Course will be held Tuesday, March 22, and Wednesday, March 23 in Room 100, Botany and Zoology Building, Ohio State University, Columbus, Ohio. An unusual program of interest to all beekeepers has been arranged for both days. Dr. C. L. Farrar, Apiculturist, Madison, Wisconsin will appear as our guest speaker this year. One of the many features will be a discussion of "Weather forecasting and planning as it may apply to beekeeping" by Mr. Howard S. Kenny, Meteorologist-Forecaster of the U. S. Weather Bureau. In addition, many others will appear on the program. There are many other Farm and Home Week features to hold the interest of those who expect to attend.

C. A. Reese,
Extension Apiarist, OSU

Middlesex Co. Beekeepers Assoc. Waltham, Mass., March 26

The next meeting of the Middlesex County Beekeepers' Association (Mass.) will be held on Saturday, March 26, at the Waltham Field Station. At this meeting the Flower Show committee will report on the results of the bee exhibit at the an-

nual Spring Flower Show. For the past two years the Association has been awarded a Silver Certificate, as well as a cash award, for the exhibit which is planned and produced by members of the Association.

L. C. Proctor, Secretary

Eastern States Beekeeping Conference Planned

The first of its kind, the Eastern States Beekeeping Conference will be held at the University of Maryland, June 17, 18 and 19, 1955. This conference is an outgrowth of the Tri-State Meeting held last July when the R. I. Beekeepers Association played host to Massachusetts and Connecticut. This meeting was planned for the benefit of the small beekeeper and there have been many requests for similar conferences. Soon after the Tri-State meeting, James I. Hambleton, of the U. S. Bee Culture Laboratory at Beltsville, took steps to have a similar meeting at the University of Maryland at a time suitable to all eastern states associations. Expenses at the University will be at a minimum and about \$17.00 should cover dormitory fees and meals.

The planning board of the conference includes the R. I. Association, the Maryland Association, the University of Maryland and the U. S. Bee Culture Laboratory. Present plans call for addresses by Hambleton and Nolan of the Bee Culture Lab, the presidents of the Rhode Island and Maryland associations, officials of the University and others. There will be panel discussions, apiary demonstrations, a picnic dinner and a banquet, tours of the Bee Culture Lab and of Washington, D. C., bee movies, and so forth.

William K. Davis, R. I.

Ladies Auxiliary American Beekeeping Federation

The Auxiliary met at the Sherman Hotel in Chicago, Illinois, Wednesday, Jan. 26 at 6:30 P.M. A fine program was presented, followed by the business meeting, re-electing Mrs. Henry Schaefer, President; Mrs. Newman Lyle, Vice President; Mrs. Robert Walstrom, Secretary-Treasurer. Roll call was taken, fifty-

three ladies present, representing 17 states.

Favors were given by the Cook-DuPage Co. Beekeepers Association, Mrs. Harriet M. Grace and Mrs. Carl Killion. Several prizes were donated which were given away at the drawing.

Mr. Wm. Wicht of Hattiesburg, Mississippi, presented a beautiful Camellia to each lady present. A social hour followed with coffee furnished by the Auxiliary. The honey cookies, served buffet style, were given by the Illinois ladies.

During the week of the Convention the ladies took a two-hour tour of Chicago, attended several TV programs and enjoyed a luncheon at the Home Arts Guild.

Mrs. Henry Schaefer, President

Wyoming Annual Worland, March 11-12

The annual Wyoming Beekeepers Association meeting will be held on Friday, March 11 and Saturday, March 12 at the County Building, Worland, Wyoming. An interesting program for all beekeepers has been arranged with several informative talks scheduled for each day. A banquet for members and their wives is planned for Friday evening.

Richard E. Schaefer, Sec.-Treas.

North Carolina Annual Meeting Chapel Hill, March 14

The North Carolina State Beekeepers Association will hold its annual spring meeting on March 14 at 10:00 A.M. in Room 211, Gardner Hall, University of North Carolina, Chapel Hill, North Carolina.

An interesting program is being planned and all persons interested in beekeeping are cordially invited.

A guided tour of the Morehead Planetarium is planned for 4:30 P.M.

Mrs. Dorothy F. McLean,
Acting Secretary

Palmetto State Annual Columbia, S. C., March 16

Palmetto State Beekeepers Association will hold its annual spring meeting at 9 a. m., March 16, at the Jefferson Hotel, Columbia, S. C.

W. C. Johnson,
Extension Entomologist

American Bee Journal

**Midwestern Beekeepers Assoc.
Kansas City, Mo., March 13**

The regular monthly meeting of the Midwestern Association will be held at Jackson County Courthouse, 12th and Oak St., Kansas City, Mo., in the court room of Stewart D. Blackburn (south door) on March 13 at 2:30 P. M.

Mrs. William Brite, Sec'y.

**Annual Meeting
Virginia State Beekeepers Assoc.
Fredricksburg, March 10**

8:30 Registration.

9:30 A. M. Call to Order—President H. L. Maxwell presiding. Invocation. Address of Welcome: Mayor of Fredricksburg. Response: John Amos, V. P. I.

10:00 A. M. Hazards to Bees in Apple Orchards: Dr. C. H. Hill, Winchester Fruit Research Laboratory.

10:30 A. M. Virginia Bee Law—Enforcement Policy: Mr. C. R. Wiley, (Virginia State Entomologist). West Virginia Bee Law—Enforcement Policy: Mr. F. Waldow Craig, (West Virginia State Entomologist). Bee Inspection—Problems: H. W. Weatherford, Virginia Inspector Oscar M. Dick, Jr., W. Va. Inspector.

12:00 Lunch.

1:10 P. M. What is news—Southern states and elsewhere: A. D. Hiatt, President, Southern States Beekeepers' Federation.

1:30 P. M. What I Saw in Florida: L. D. Arnold, assistant Virginia Inspector.

1:40 P. M. Hobby Beekeeping: F. W. Gravely, Branch Manager, A. I. Root Co., N. Y. C.

2:00 P. M. Cost of Producing Section Comb Honey: C. Stanley Clevenger, sideline beekeeper, employee U. S. Department of Labor.

2:10 P. M. Cost of Producing and Packing Chunk Honey: M. C. Ludlam, Lynchburg, Va.

2:20 P. M. The Purpose of the Honey Show: John Amos, Extension Specialist, V. P. I.

2:30 P. M. What we've done about the Honey Exhibits: G. W. Vest, Lewis Co., Lynchburg, Va.

2:40 P. M. Who's Who in the County Bee Associations.

3:20 P. M. Committee Reports.

3:50 P. M. Recognition of Donors of Door Prizes.

4:00 P. M. Drawing for Door Prizes.

Evening Session

7:30 P. M. Announcement of Winners of Honey Show.

Other Entertainment: To be announced.

March, 1955

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BEES AND QUEENS
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Full weight, prompt shipment. Young bees. State health certificate with each shipment. Live arrival guaranteed.

We ship by mail or express.

1955 PRICES WITH YOUNG LAYING QUEENS

Lots of	2-lb.	3-lb.	4-lb.	5-lb.
1 to 25	\$3.25	\$4.00	\$4.75	\$5.50
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Tested queens, \$2.00 each

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For introduced queen add \$1.00 per package. If queenless bees are wanted deduct \$1.00 from the package price.

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Three-banded Italian bees and KELLEYS ISLAND improved hybrid queens direct from our own bee farm. Shipments start April 1st—express or parcel post shipment. Thousands of extra queens.

	Queens	2-lb. W.Q.	3-lb. W.Q.
1-24	\$1.10	\$3.50	\$4.50
25-99	1.00	3.25	4.25
100	.95	3.00	4.00

(Last month our advertisement got mixed up—these are our actual selling prices—they are net—no discounts.)

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Caucasian or Italian Package Bees and Queens

Bees gentle to work with, less swarming, good producers, health certificate, live arrival guaranteed are just a few things you get when your requirements are sent to me. Prices are:

Quantity	1-25	25-50	50-100
2-lb. pkg. w/q	\$3.00	\$2.90	\$2.85
3-lb. pkg. w/q	2.90	2.80	2.75
4-lb. pkg. w/q	2.85	2.75	2.65
5-lb. pkg. w/q	2.80	2.70	2.60
Queens	1.05	1.00	.95

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Shannon, Miss.

**— ITALIAN —
Package Bees and Queens for 1955**

	1-11	12 or More
2-lb. pkg. with Queen	\$3.25 each	\$3.00 each
3-lb. pkg. with Queen	4.25 each	4.00 each

Live delivery guaranteed.

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The rearing of good Italian queens and bees is our only business.

45 Years Experience

	1 to 9	10-48	49-up
2-lb. pkg. with qn.	\$3.60	\$3.35	\$3.25
Queens	1.25	1.15	1.10

Add 90c per lb. for larger packages.

Young Laying Queens. Full Weight. Young Bees. Health Certificate with Each Shipment.

Prompt Service.

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— **THRIFTY BEES** —
Combless Packages and Queens.
Three-banded Italians only.

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Editorial

Credit Where Credit Is Due

The twelfth annual convention of the American Beekeeping Federation is now a matter of history and we tell about it elsewhere in this issue. It was an outstanding meeting in many ways; there was a spirit of good feeling and cooperation beyond that we have seen before; and there was more and more evidence that those associated in various ways with the bee and honey industry were willing to serve diligently without pay and often without merited recognition, to the end that each and all of us might benefit substantially.

So the purpose of this editorial is to give credit where credit is due insofar as we are able in this small space. We cannot mention everyone and, if we attempted to do so, we doubtless would fail to be inclusive. So we must confine our remarks to only a few of those who accepted responsibility and who, recognizing the full meaning of their respective duties, worked unselfishly, tirelessly, and diligently for the best interests of the entire beekeeping industry.

We first must point to Henry Schaefer, President of the Federation, who finished two successful years of outstanding leadership, and was honored by being offered a third term for the first time in the history of the organization. He accepted, knowing full well the responsibility and load of work that position entails. Secondly, we would mention Mrs. Schaefer who has shared with him this responsibility and is continuing to serve as President of the Ladies Auxiliary. The industry can never repay them for their years of devoted service.

Among those deserving "gold star" awards, we would mention S. Joaquin Watkins, chairman of the Marketing Committee for the past two years and now vice president of the Federation; Alan Root, chairman of the Honey Industry Council; R. B. Willson, chairman of the Honey Utilization Committee and new chairman of the Honey Industry Council; Robert Banker, secretary-treasurer of the Federation; Newman Lyle, chairman of the Program Committee; John Lis and other members of the Cook-DuPage Beekeepers' Association; and members of the official family of the Federation.

To all those who assumed offices

and recognized their responsibility in so doing, we send our commendation and sincere thanks. My job and yours—my future and yours—has been enhanced by their unselfish service, for service is the rent we pay for our room on earth.

Why Do We Keep Bees?

It's an odd expression, "why do we keep bees?" Wouldn't it be more truthful to say that bees "keep us"? There is no commercialism in the expression. We supply bees with a home but they take care of themselves. They are freedom's creatures. We marvel at what they do and we are in the grip of their fascination. Once imbued with their mystery and their ways we are as surely possessed as a tree rooted in its ground. We can't escape. A seal has been put upon us.

If only the profits from beekeeping were our interest, we could quickly find other things in the pursuit of which profits would be easier and more satisfactory. No, it is not profits that hold us; it is the feeling of unity with the great overshadowing, with the divine fires that light our way, little known and little understood. Our interests bring us closer to basic realities.

We keep bees, whether we are fully willing to admit it or not, because it is a way of life; a close touch with things unknown and little understood. We say we "keep bees because we like them." Well, that's it, simply said. We almost love them. As long as we feel that way our husbandry will engage our hearts for all time.

Honey, Nectar of the Gods

Sure enough, it is. No food seems to have the appeal that honey has; the mystery of it; the fascination of it; the close community of it with natural forces that are beyond our understanding. One could expand the never-ending virtues of honey, not only as a food for ourselves, but as a divine link in the oneness of all. Trouble is we do so little about it.

Here is a story that would engulf people; here is a food that has hidden value about which we know little. One important basic value of honey, properly told, might bring this industry more prosperity than we have ever deemed possible.

Choice Honey Bees and Queens



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1 to 9	\$1.25	\$3.50	\$4.50
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Young Laying Queens—Full Weight—Young Bees. Health certificate with each order. Deduct 20 cents a package for bees in clean used cages.

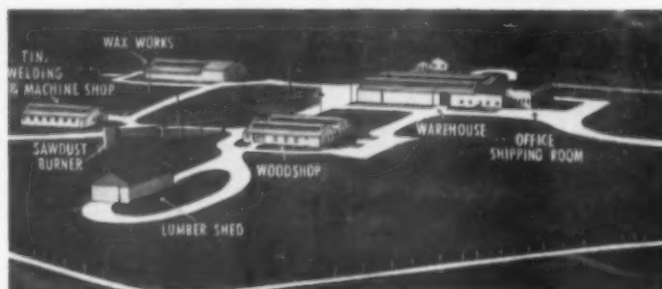
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100-up	.75	2.75	3.75

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Quantity (packages)	2-lb. with Queen	3-lb. with Queen	4-lb. with Queen
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QUEENS: 1-24 \$1.10

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1-24	\$1.20	\$3.50	\$4.40	\$5.30
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Live delivery—Health certificate. Light cages—Young mated and laying queens.

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BEES AND QUEENS

CARNIOLAN and CAUCASIAN package bees—2-lb. pkg., \$3.00; 3-lb. pkg., \$4.00. Untested queens, \$1.00 each; 100 queens, \$75.00. Tillery Bros., Greenville, Ala.

CAUCASIANS—Very hardy, gentle, long lived, good workers. Personally raised laying queens, \$1.10 each. Ready about April 18. Fred Brock, McDonald, Tenn.

GOLDEN ITALIAN QUEENS—Bees are very large and gentle, and heavy honey producers. Price 90c each. Guaranteed live arrival and health certificate. Allen H. Gauthier, Hamburg, La.

LIGHT 3-band Italian bees and queens. Luther Pickett, Effand, N. C.

DARK ITALIAN QUEENS—600-lb. strain, bred for production, \$1.00. With 2-lbs. of bees, \$2.85; with 3-lbs. of bees, \$3.70. Henry Loeher, Caldwell, Texas.

THREE-BANDED bees and queens. Starline Hybrid and our regular strain. Shipped from LaBelle, Florida, until May 1st. Alamance Bee Co., Graham, N. C.

PACKAGE BEES—Take a vacation on your express money. Come for your bees; be our guest while here. 1800 hives to shake. Booking orders now. Write Miller Bros., Safford, Ala.

BY PREARRANGEMENT a limited number of Carniolan queens, mated to Caucasian drones. Howard Weaver, Navasota, Texas.

GOLDEN ITALIAN QUEENS that produce large gentle bees, excellent honey producers. Price \$1.00 each. Live arrival and health certificate guaranteed. Alvin J. Ducote, Hamburg, La.

ITALIAN QUEENS—\$1.25 postpaid. 2-lb. bees and queen, \$4.25; 3-lb., \$5, express collect. Distant Starline Hybrids (The Wonder Workers), 25c per queen additional. Parcel Post, add postage for 6-lb., 7-lb. S. J. Head, Crossett, Ark.

ITALIANS—Packages, queens. Martz, Rt. A2, Box 846, Vacaville, Calif.

FOR SALE

FOR SALE—700 colonies bees in the Big Horn County of Montana, in two-story 10-frame hives, ample equipment. Write Box AM, c/o American Bee Journal.

80 colonies of bees, one-story, 10-frame, and all equipment. Must sell for health. Located in Illinois. For more information write Walter Taylor, 206 Thomas Ave., Evansville, Ind.

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THIRTY COLONIES BEES—Fully equipped, ten-frame, disease unknown. Honey tank automatic siphon. Charles Thompson, Rt. 3, Falmouth, Ky.

FOR SALE—75 modern hives, all equipment. Power uncapping machine and extractor. What am I bid? J. F. Lockard, Jr., 95 Beckman Ave., North Tarrytown, N. Y.

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FOR SALE—One thousand 10-frame deep supers with frames, factory made. Frames 18-inch top bars. Price \$1.00 each, f.o.b. Hardin. Mont. Alex Martin Honey Farms, Hardin, Mont.

500 tops, bottoms, supers, bodies for 1400 lbs. light honey. Fred Wyatt, Oak Grove, Mo.

Copy for this department must reach us not later than the tenth of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

Rate of Classified Advertising—13 cents for each word, letter, figure or initial, including the name and address. Minimum ad, ten words.

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FOR SALE—8-frame Root equipment for 700 colony apiary. Write for details. E. H. Wadleigh, Monte Vista, Colo.

5 colonies two-story, ten-frame, dovetailed, painted, with Starline hybrid queens. Heavy stores, no disease. Jay Barr, Lamoni, Iowa.

FOR SALE—110 two-story standard ten-frame swarms and equipment. Henry Einhaus, Seneca, Ill.

60 empty 10-frame deep supers equipped with galvanized covers and board bottoms, 1 capping press with 20 x 24 in. basket, 1 electric uncapping plane with extra new coil, 1 steam uncapping plane, 24 bee-way supers. Write or see me. P. S. Veemaker, Box 108, George, Iowa.

FOR SALE—12-frame power extractor; 4-frame basket extractor; 50 cases new 2-lb. honey jars and lids by dozens; 50 cases new 1-lb. honey jars and lids by 24 each; 60 bottoms and 90 lids for std. 10-frame boxes. G. A. Whitney, 927 Oxford Drive, Emporia, Kans.

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1700 eight and ten frame standard hive bodies with frames; some covers and bottoms. Extractor, boiler and jacketed piping. All in Louisiana. Name your own price and terms. Write L. M. Gulden, 4312 N. Maine Ave., Baldwin Park, Calif.

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SMARTWEED honey wanted. Rocke Apiaries, Eureka, Ill.

HONEY WANTED—Extra white, white and light amber, in 60's. Send sample and quote price. Cash paid. Clearbrook Honey Farms, Clearbrook, Minn.

HONEY WANTED—All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 2613 South Yates Ave., Los Angeles 22, Calif.

WANTED—Dark honey, small or large quantities. R. L. Griggs, Hancock, Iowa.

HONEY AND BEESWAX WANTED in trade for supplies or cash. Hodgson Bee Supplies Ltd., 565—13th Ave., New Westminster, B. C., Canada.

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WANTED—Extra white and light amber honey. Let us ship you the containers. Sell us your honey for CASH on delivery. The Hubbard Apiaries, Manufacturers of Bee Supplies and Comb Foundation, Onsted, Michigan.

WE ARE PAYING top prices on beeswax shipped to one of our plants. Sioux Honey Association, Lima, Ohio; Rogers, Texas; Anaheim, California; Tacoma, Washington, and Sioux City, Iowa.

WRITE FOR SHIPPING TAGS and current quotations on rendered beeswax. Any amount from one pound up bought. If you have 25 pounds or more, save 25% by letting us work it into foundation for you. Walter T. Kelley Co., Clarkson, Kentucky.

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WHITE CLOVER HONEY in sixties. Ralph Gamber, 910 State, Lancaster, Pa.

TWO TONS extra white clover honey, finest flavor. Box N.Y., c/o American Bee Journal.

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BEEKEEPER for migratory and pollination service. Drive truck, clean habits. Give experience, reference, age, etc. Mint Canyon Honey Farms, Rt. No. 1, Box 103, Saugus, Calif.

WANTED—Helper in honey and package bees department for 1955. N. Forehand, Destin, Fla.

WANTED—2 men in our apiaries and packing plant. Experience not essential. Good wages, bonus, other benefits. Schultz Honey Farms, Ripon, Wis.

WANTED—Beekeeper for 1955 season. State experience and references. Hartmann, 4851 Paddock Rd., Cincinnati, Ohio.

WANTED—Two experienced beemen. Year around work or seasonal. Jim's Valley Apiaries, Sunnyside, Wash.

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WRITE FOR CATALOGUE. Quality bee supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Michigan.

WANTED

WANTED—300 empty hive bodies, 10-fr. standard. Ben Hughes, St. Joseph, Mo., Rt. 7.

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BEEES removed from house or tree to hive without touching either house or bees. Bees will then move honey into hive. Save property, honey and bees with my method. Send \$2 for details. Satisfaction guaranteed. George Hawkins, Rt. 1, Lawson, Mo.

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QUEENS	—	ITALIANS
1-24		25-99 100-up
2-lb. pkg. w.q.	\$3.00	\$2.90 \$2.85
3-lb. pkg. w.q.	4.00	3.90 3.85
Nice lge. queens	.95	.90 .85

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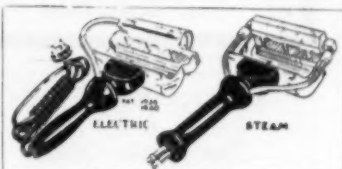
Below are the chunk comb honey prices recommended by the Southern States Beekeeping Conference at their meeting in Orlando in December:

	To Stores	Retail
1- lb. jar	Case 24 \$8.00	.45 each
2½-lb. jar	Case 12 9.00	\$1.00 each
5- lb. jar	Case 6 8.75	1.90 each

It is hoped to stabilize prices on southeastern retail packs before another season.

"Bee Wise-Woodmanise Your Bee Supplies"

A. G. Woodman Co. (Send for catalog—350 Listings) Grand Rapids 4, Mich.



We are again able to offer the Rosedale Steam and Electric Uncapping Planes to the American Beekeepers. Write for Free Circular. Price delivered, Electric Plane—\$13.00, Steam Plane—\$8.00. Satisfaction guaranteed. Full line of repairs on hand.

Write for Free circular of the Two-Queen Convertible Hive.

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Combs from Dadant's Crimp-wired Foundation have little non-profit space—no sagged areas; no distorted cells; few drones. There will be very few combs to discard. Each comb, with reasonable care, will last almost as long as your beehive. So every comb you have becomes a long-term investment. They start to save you money the moment the bees have built them. In the end they are the least expensive combs you can possibly get.

DADANT and SONS

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Hamilton, Illinois

PACKAGE BEES FOR 1955



Reg. U.S.
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Dadant's Starline Hybrid Stock—38% Better Honey Production than the average common stock of the country (3 years trial); 18% Better Egg-laying Ability than the average common stock of the country (4 years of trial). Results of other trials obtainable by mailing us a postal card.

GARON'S OWN 3-Banded Italian Stock improved through know-how in selecting Breeding Queens and Drone Mothers for combinableness necessary for highest honey production.

	QUEENS		Package Bees and Queens		
	Italians	Starlines	2-lbs.	3-lbs.	4-lbs.
1-24	\$1.15	\$1.50	\$3.40	\$4.35	\$5.30
25-99	1.10	1.40	3.30	4.25	5.20
100-up	1.05	1.30	3.20	4.15	5.10

When Dadant Starline 4-Way Hybrid Queens are wanted with packages, add 25c extra per package.

Queens clipped and marked when desired, and Air Mailed at no extra cost.

GARON BEE CO.

Donaldsonville, La.

THREE-BANDED ITALIAN PACKAGE BEES AND QUEENS

Shipped Anywhere in United States and Canada

1955 Prices F.O.B. Hampton, S. C. (each)	Queens	2-lb. & queen	3-lb. & queen	4-lb. & queen	5-lb. & queen
1-24	\$1.10	\$3.50	\$4.50	\$5.50	\$6.50
25-99	1.00	3.25	4.25	5.25	6.25
100 up	.95	3.00	4.00	5.00	6.00

(For queenless packages deduct price of queen)

Guaranteed safe arrival

Health Certificate with each shipment

Queens clipped and painted if desired

Shipper rated in Dun and Bradstreet

TERMS: One-third with order, balance 10 days before shipment.

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Get your order in the mailbox now and be assured of getting your bees and queens when you want them.

Our price is right: 2-lb. with queen, \$3.50; 3-lb. with queen, \$3.50; queens, 1-24, 90c each; 25c each any amount over. We guarantee health certificate, live arrival and full weight packages of gentle bees.

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The biting quality of the honey, that delicate center taste is foundation. It must become a part of the honey, so tender, a touch of the tongue will crumble it; yet be so strong, that bees work it out quickly and easily. Dadant's Surplus Foundation, fragrant and pure, thin and sweet, blends so naturally with your finest comb honey, that your market grades are better and sales are quicker.

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Chrysler's Electric Welded All-Steel Queen Excluder



The only
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Queen
Excluder
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- Accurate spacing
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- No wood. No Burr combs
- No sharp edges to injure bees
- So durably made that it is permanently queen excluding and will last a life time.

We manufacture a full line of Bee Supplies. Order from our dealers or direct from our factory. Canadian-made goods are cheaper. No duty. Send for our price list. Always in the market for Beeswax. Cash or trade.

W. A. CHRYSLER & SON
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Caucasian Queens

1-11 at	\$1.25 each
12-49 at	1.10 each
50 or more at	1.00 each

Postpaid by Air Mail.

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Grass Valley, Calif.

Extract Royal Jelly with

**The Little Queen
ROYAL JELLY
EXTRACTOR***

(* Patent Pending)

**Fast - Efficient - Easy to Clean
Extract in Outapiaries**

Powered by your car, truck, pickup.

\$25.00 Postpaid

Royal Jelly Enterprises
617 Market Street, Colusa, Calif.

ITALIAN BEES and QUEENS

2-lb. & queen	\$2.75
3-lb. & queen	3.50

**Prompt Shipment
Satisfaction Guaranteed**

A. J. Hook

Eutaw, Ala.

WILLIAMS ITALIAN QUEENS Large Leather-Colored Three-Banded QUALITY SUPREME

Certificate with each shipment

1-9 Air Mail	\$1.00 Each
10-99 Air Mail	.95 Each
100 Up Air Mail	.90 Each

DR. WILLIAMS APIARIES

115 W. Sterling St. Baytown, Texas

CROPS and MARKETS

by M. G. Dadant

Honey Selling

Practically without exception beekeepers report honey sales have picked up and that the demand is now quite good although there was a lull immediately following the holidays.

Bulk honey on hand—there are still a few lots on hand which are not spoken for. Apparently producers who are holding such honey are awaiting the possibility of a higher price which means a price of, say, 15 cents per pound.

It is true, of course, that the larger packers fortified themselves quite well with honey and we have no reports of any of these running out, although it is no doubt true that, on occasion, at a favorable price they would pick up still more honey even at this late date.

Will All Honey Move?

Without exception, it appears that all honey except for some few lots as mentioned above and a few off-grades will move before the new crop begins to come in. In fact, it looks like a better clean-up than we have had in a great length of time. It is also apparent that such honey as was placed under loan is rapidly being cleared up now rather than letting it go to the government.

Condition of Bees

It is the writer's personal opinion that bees are not coming out into the spring in as good a condition as they have been during the past three or four years and this is due largely to two causes. The first one is that the fall flows were disappointing last season and as a consequence the queens did not lay as well and the colonies did not go into winter quarters with as many young vigorous bees as is usually the case. In the second place, unless the beekeeper was attentive, it is doubtful whether the clusters went into winter with as much provisions on hand as is usual. There will no doubt be a lot of starving bees this spring unless the beekeeper is careful and sees that the bees are fed in that dearth time just previous to the major flows.

We look for many colonies to turn up "missing" and probably a spurt of orders for package bees. This

condition, combined with the fact that the sales of honey have been excellent and have been encouraging to beekeepers generally, should make for a better demand than has been the case for the past few years for package bees.

Honey Plants

Actually it is too early to report on honey plants but from all conditions last fall with fair rains throughout the northern areas, it seems apparent that honey plants are in a fair to quite satisfactory condition. In fact in the Northeast it appears that honey plants are far better than they have been of late.

Legume seed prices have ruled fairly high and we look for an impetus to the planting of legumes on this account. It is apparent in Texas and the area farther east that crimson clover is coming through satisfactorily and that the acreages of both Hubam and vetch may be in excess of a year ago, although there is a feeling of uncertainty on account of the difficulty of combining proper vetch spraying together with proper pollination and nectar harvest.

Moisture

We hear of no areas where there has not been quite good moisture. The Canadian provinces are particularly well pleased and this extends down into the northern areas of the United States with the exception of perhaps Montana. In fact, we might state that generally moisture conditions have not been satisfactory on the eastern slope of the Rocky Mountains from north to south although farther west the snows seem to have been fairly good, assuring a fairly good water supply.

While we mention that moisture conditions apparently are satisfactory, we must qualify this by saying that surface moisture conditions are satisfactory, although subsoil moisture no doubt has not been made up, particularly in the Southeast and Southwest where drought conditions occurred.

Honey Wanted—Care and less than car. Top Prices.
C. W. Aeppler Co., Oconomowoc, Wis.

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ITALIAN BEES AND QUEENS**
2-lb. pkgs. with young queens, \$3.00
3-lb. pkgs. with young queens, \$4.00
Extra Queens
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ITALIAN BEES and QUEENS for 1955

2-lbs. with queen \$2.60
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Extra queens, 80c each.

Safe Delivery Guaranteed

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- B. **WAXMASTER** Electric Capping Melter
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Write for further information.

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Attention!

It is a pleasure to announce that I have sold my Caucasian Queen Apiaries to Don Strachan of Yuba City, Calif. I am sure he will give the same fine service and quality as you have been accustomed to in the past.

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Three-Banded Italian Bees and Queens

Due to the late springs we have been having in N. Carolina, we are breeding queens down in the sunny South so we can give them to you when you want them. We will have laying queens any time after Feb. 1 to 10. We have two races bred in separate yards—

Dadant's Starline Hybrids and our Regular Strain.

Regular Italians
1-25 \$1.20
25 up 1.10

Starlines
1-25 \$1.50
25-99 \$1.40
100 up 1.30



Reg. U.S.
Pat. Off.

Write for prices on package bees. Package bees will be shipped from Graham, North Carolina, after April 1, which will cut the cost of transportation very much.

ALAMANCE BEE CO. P.O. Box 485, LaBelle, Fla.

THREE-BAND ITALIANS CAUCASIANS

Equal in quality to any that we know of, and guaranteed to produce in the top brackets. What you want when you want them.

	Queens	2-lb. pkg. w/q	3-lb. pkg. w/q
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100-up	1.00	3.45	4.25

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AS GOOD as the BEST (Including HYBRIDS)

	1 to 9	10 to 50	51 & up
With queens			
2-lb. pkgs.	\$3.75	\$3.50	\$3.25
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Extra queens	1.20	1.10	1.05

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We guarantee health certificate, live arrival and full weight packages of gentle bees.

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Deduct 95c for queenless packages.
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Write for attractive prices.

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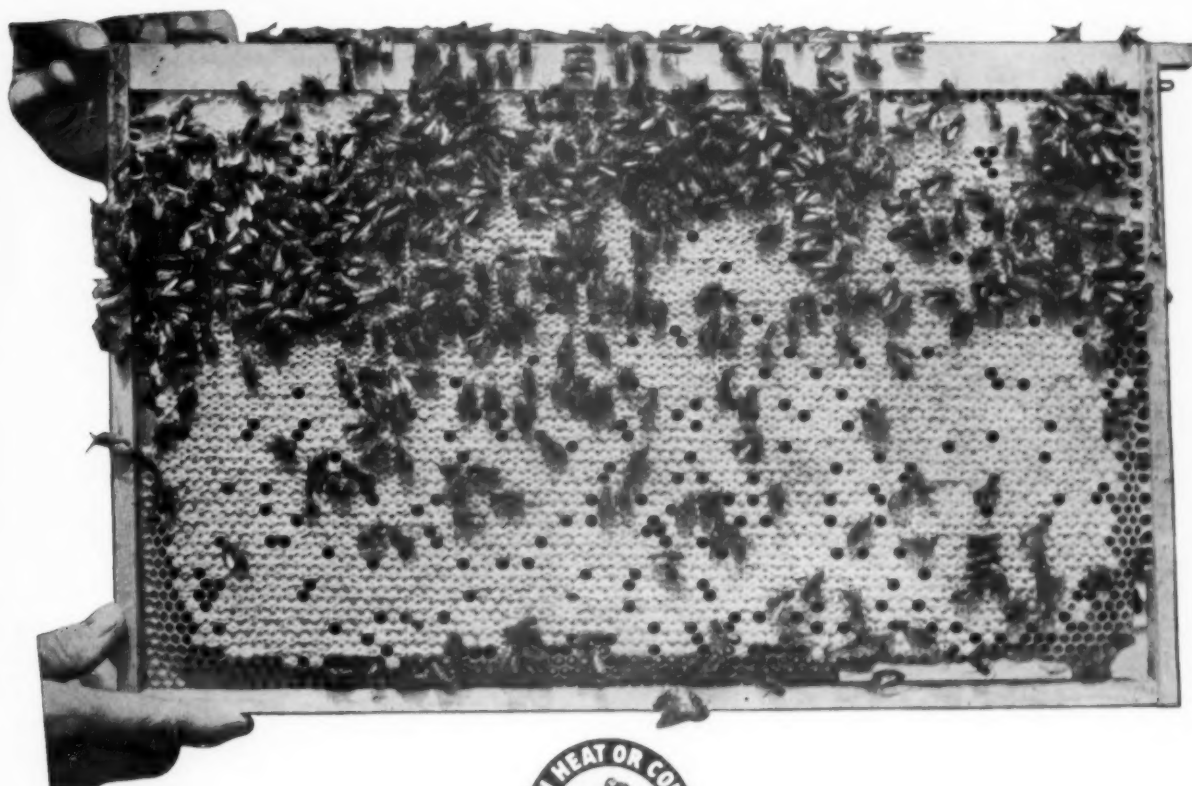
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Dadant's Gilt-Edge Foundation

Wired with both vertical and cross wires and bound with golden metal edges. No wiring to do. In Lewis Nailless Topbar Frame, Gilt Edge assembles in less than a minute. Send 25c for sample frame and foundation (Gilt-4-Edge for Lewis frame; Gilt-3-Edge for any wedge topbar frame with slotted or grooved bottombar.)

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Without wires for those who have their own way of assembling and wiring foundation. The cells are sharp and clear cut with strong side walls and good, solid bases. This foundation has been made by Dadants for over seventy-five years. Each sheet is inspected so you get only perfect ones, in tissue packed, tight fitting cartons.



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combs



few drones



more bees



bigger crops

reduces
extractor
damage and
moving
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stands high
temperature



gives lifetime
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For prize-winning section comb honey. So thin and clear you can see right through it. Its biting quality at the base of your honey lets the wax crumble under your tongue; delicate, tasty, downright good. If you want the kind of comb honey shown in the premium displays you can get it with Dadant's Thin Super Foundation.

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For honey cut from the comb to pack in glass or to wrap. Used in shallow super combs to produce honey with a fine finish, with even surface; free from disfiguration. This honey, when packed must be so attractive the customer will just want to buy more. Dadant's Cut Comb Foundation will produce just the honey you want.

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